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Prehistoric Habitation in Southwestern Peloponnese

WILLIAM A. McDONALD AND RICHARD HOPE SIMPSON

PLATES 73-78

I. INTRODUCTION

In the last twenty years the attention of the classical world has been focussed increasingly on southwestern Peloponnese. The main reason, of course, is Professor Blegen's discovery and excavation of the palace at Ano Englianos, and especially its extensive archives.

From the very beginning of the decipherment of the Pylos tablets in 1952, efforts have been made to relate place names mentioned therein to ancient sites already known. The recent literature is studded with various and conflicting identifications; but the fact remains that, for the whole area discussed in this article, not a single certain equation has yet been made as a result of the new documentary evidence.

At least two reasons for this initial lack of success are fairly obvious. We are still only in the beginning stage of understanding the language and in-

terpreting the content of the tablets. In addition, far too little systematic topographical research had been done prior to 1952.¹ Until a broader basis of solid fact has been established within each of these branches of study separately, any attempt at synthesis, tempting as this may be, is likely to prove abortive.

It was Blegen's acute awareness of the paucity of previous field work that prompted him to suggest to Professor McDonald in 1953 that he should begin a series of systematic campaigns of surface reconnaissance, starting with the palace environs and gradually fanning out north, east and south. Four such campaigns have now been completed, the two most recent in collaboration with Mr. R. Hope Simpson. We have also had the valuable assistance of Dr. Nicholas Yalouris, representative of the Greek Archaeological Service in western Peloponnese, as well as the whole-hearted cooperation of

¹ A glance at the centennial publication of the Greek Archaeological Society (*Tὸ Εργον τῆς ἐν Ἀθηναῖς δρχαιολογικῆς Ἐταιρείας κατὰ τὴν πρώτην αὐτῆς Ἑκατονταετίαν*, 1837-1937 [Athens 1938]) is sufficient to establish the point. Of the eleven entries referring to excavations or explorations in the area with which we are concerned, only three have to do with the prehistoric period. Karo's 1935 article on "Mykenische Kultur" in *RE* (Suppl. VI, 607) lists twenty-two sites for our area, but a couple of these are questionable and the majority derive from Valmin's intensive work in one relatively small section.

Reference will be made below in proper context to the pioneering work of Professors Skias, Tsountas and Kourouniotes. The last-named scholar shared with Blegen in the 1939 discovery at Ano Englianos (cf. *AJA* 43 [1939] 557-76). And since 1952 Professor Marinatos, who succeeded Kourouniotes in the joint enterprise, has carried on annual excavations in the immediate palace district (cf. annual summaries in *Tὸ Εργον τῆς δρχαιολογικῆς Ἐταιρείας κατὰ τὸ 1954*, and following; henceforth referred to as *Ergon*). In the north, Professor Yalouris has in the same period been conducting equally vigorous surface exploration and excavation (cf. annual summaries in *Ergon*).

Among non-Greek scholars, particular mention must be made of the discoveries of Dörpfeld, Sperling and Meyer in the north, and of Blegen and Valmin in the south. It should in no way detract from the high quality of their work to point out that Meyer and Valmin have been primarily interested in topographical problems of post-Bronze Age date. For example, in Meyer, E., *Neue Peloponnesische Wanderungen* (Bern 1957; henceforth referred to as *Meyer*) only four sites with Mycenaean pottery are mentioned; and even in his short discussion of the Pylian catalog cities (pp. 72, 73) Meyer seems to place much more confidence in Strabo and in toponyms than in strictly archaeological evidence. Although Valmin, M. N., *Études Topographiques sur la Messénie Ancienne* (Lund 1930; henceforth referred to as *Études*) is the most valuable published study of general Messenian topography, it cannot be considered an exhaustive field study of the pre-classical habitation pattern. More valuable from this aspect is Valmin's detailed surface survey of the Soulima plain of Triphylia (cf. *Bulletin de la Société des Lettres de Lund* [1925/6 and 1927/8]; henceforth cited as *BullLund*). One might consider Dörpfeld's extensive field work (cf. especially the article "Alt-Pylos. III. Die Lage der Homerischen Burg Pylos," *AM* 38 [1913] 97-139, cited hereafter as *Dörpfeld*) as oriented primarily toward the Mycenaean period. But his results are weakened by vagueness in recording the locations of his sites and an understandable lack of precision in classifying the ceramic evidence. In addition, Dörpfeld sometimes strained the evidence in a laudable attempt to establish some connection between the sites he located and references in classical literature, particularly in the Homeric poems. Sperling's valuable research (*AJA* 46 [1942] 77-89; henceforth referred to as *Sperling*) was unfortunately interrupted permanently by a change of vocation during World War II. But he was interested mainly in Elis and he located almost no new sites south of the Alpheios valley. Blegen's interest in Messenian topography long antedated 1939, but his most intensive campaign of exploration was in the spring of 1939 and in the area of the Bay of Navarino. His interest in the wider habitation pattern has continued during the course of the excavation of the palace site. The only other major excavation of a prehistoric habitation site within our area was conducted by Valmin at Malthi-Dorion and published as *The Swedish Messenia Expedition* (Lund 1938), henceforth referred to as *Malthi*.

Dr. John Papadimitriou, Director of the Archaeological Service.² Each successive campaign of surface exploration has not only revealed a great deal of new evidence, but has also taught us how much more can be discovered as field methods improve and familiarity with the terrain and with the local inhabitants increases. No doubt the present writers and other researchers will have additions and revisions to make before long; but the bulk and importance of material is already such that we have decided it should be made available to interested scholars without further delay and in one convenient publication.³

There are still gaps in our coverage, as well as areas that need more thorough search; but we have examined the greater part of a coastal strip averaging twenty kilometers in width between the Alpheios river on the north and the tip of the Messenian peninsula to the south. In places we have penetrated further inland, especially up the river

valleys. We have also made some progress on a survey of the Pamisos plain of eastern Messenia and of the eastern coast of the Messenian gulf.⁴ The area covered is approximately that of the modern *nomos* of Messenia, including the eparchies of Triphylia and Pylia on the west and of Messini and Kalamai on the east, plus the eparchy of Olympia in the *nomos* of Elia at the extreme northwest. It is regretted that our maps are inevitably subject to some inaccuracies, since even our "fixed" points (such as modern villages and mountains) have never been properly surveyed, and we have had neither the time nor experience to make new and reliable relief maps.

The present report is meant to be entirely factual. It has to do exclusively with independent archaeological evidence for habitation until the end of the Bronze Age. That is, we make here no systematic effort to collate our new discoveries with data in the Pylos tablets nor to confirm or refute previous

² In 1953 McDonald spent two weeks in an intensive surface exploration of the area within a radius of five to ten kilometers of the palace site. His companion was Charalambos Christopoulos, a native of Koryphasion village, who as a young man developed an interest in such investigation under Professor Kourouniotes' tutelage. Again in 1955 McDonald spent about four months investigating the coastal area from Kyparissia down to Methone. He was accompanied on this occasion by Dionysios Androutsakis, of Chora village, who has been foreman of Blegen's excavations since 1952. In this campaign a second objective was to collect the extremely numerous modern toponyms used to designate towns, mountains, streams, valleys, bays, ridges, and so on. The purpose was to discover whether any of the toponyms in the Pylos tablets might have remained in continuous use in out-of-the-way spots. McDonald summarized at the annual meetings of the Archaeological Institute of America in December, 1955, the more important results of the 1953 and 1955 campaigns. He also provided Professors Blegen and Marinatos with a detailed report on his discoveries.

A fellowship granted by the John Simon Guggenheim Foundation for the 1958-59 academic year made possible the continuation of the field work at a greatly accelerated pace. A series of fall trips, again accompanied by Dionysios Androutsakis, ranged as far north as the Alpheios and south to Korone. The winter allowed an opportunity for research, particularly in Messenian toponymy, in the Gennadeion Library and in the archives of the *Historical Lexikon der Griechischen Sprache* being published by a distinguished staff under the direction of Dr. John Kalleris, and sponsored by the Academy of Athens.

In the spring McDonald was joined by Hope Simpson, who had done considerable previous field work in Lakonia and had won the first Michael Ventris Memorial Award for the Messenian assignment. The collaborators covered the area indicated in plates 73 and 74, including a re-check of most of McDonald's previously discovered sites. During much of this period they were accompanied by Dr. Peter Topping, Director of the Gennadeion Library in Athens, who was carrying on research related to Frankish occupation in the same general area. Not a little of any value this study contains is due to Topping's stimu-

lating companionship and uncanny ability to elicit friendly interest and assistance from local officials, scholars and peasants. For approximately two weeks Dr. Diomedes Charalambous, an assistant in the Department of Geology at the University of Athens, was a member of the expedition. The hope was that with the use of an earth-borer some new and much needed evidence might be obtained on changes in the coastal pattern since the Bronze Age. The results, however, are inconclusive and no report is contemplated until more equipment and personnel can be mobilized. For the only detailed and reliable general survey of the geology and physical geography of our area, cf. Philippson, A., *Die griechischen Landschaften* Band III, Teil 2: *Der Peloponnes: der Westen und Süden der Halbinsel* (Frankfurt-am-Main 1959), cited hereafter as Philippson.

Finally, the authors were both on the ground during July, 1960, to carry on a series of re-checks before this material went to press. They were assisted for ten days by Mr. J. F. Lazenby of the University College of Newcastle-on-Tyne, England.

³ In addition to McDonald's occasional progress reports (none published), some information on our results has been previously available as follows: a summary read by Professor L. R. Palmer at the second Mycenaean session of the Third International Classical Congress in London, September, 1959 (McDonald had been invited to report in person but was unable to attend); Hope Simpson's report to the Mycenaean Seminar of the Institute of Classical Studies, University of London, summarized in the November 11, 1959, *Minutes*, and in *Nestor* (circulated by Professor Emmett L. Bennett, Jr.) shortly thereafter; McDonald's paper at the December, 1959, meetings of the Archaeological Institute of America, summarized in *AJA* 64 [1960] 188; and a joint article in *Illustrated London News*, April 30, 1960, 740-41.

⁴ For the southeastern section cf. particularly Hope Simpson's article, "Identifying a Mycenaean State," *BSA* 52 (1958) 231-59 (henceforth referred to as *Hope Simpson*) and bibliography therein. The fact that we are interested in this area does not necessarily imply that we are convinced that it was under Pylian control in LH IIIB. For our views on the problem of the Pylian borders, cf. Section III.

identifications of known habitation sites on the basis of literary evidence.⁵ But we have attempted to re-check the archaeological evidence for every ancient site reported by other researchers before including them in our survey.⁶

We have had to exclude from the following pages any systematic discussion of McDonald's compilation of modern place names⁷ as well as of our joint discoveries in the area of post-Bronze Age habitation. These subjects must wait for the more detailed publication which they deserve.⁸ It is our hope, however, that by this prompt publication of evidence for the Bronze Age we may help all interested scholars to form sound conclusions and test new hypotheses about an area and period so prominent in recent discussion.

II. CATALOG OF SITES

Our system for presenting the evidence for the individual sites is as follows:

1. A *running number* designates the site and corresponds to the number in the maps (pls. 73, 74, 75). Enumeration of the area we have covered begins at the northwest and proceeds toward the southeast.

⁵ For example, our new evidence and that recently published by Yalouris (cf. Section II, #1) in connection with the site at Ayios Andreas (classical Pheia) may be regarded as supporting the equation of the important "tablet town," Pi-*82, with Pheia. But caution suggests that the phonetic value of *82 must first be exhaustively studied and if possible established by the philologists in the context of the tablets *only*, before adducing attractive but possibly fallacious arguments of a topographical, archaeological, or historical nature.

Similarly, we shall not discuss here the controversial identifications of known prehistoric sites on the basis of evidence in the Homeric poems or even later literature. Some of the more notable of Dörpfeld's followers who have continued this practice in west Peloponnesian topography include F. Bölte ("Ein pylisches Epos," *RheinMus* 83 [1934] 317-47) and V. Burr (*Neön Katalogos, Klio Beiheft* 49 [1944] 158 pp.). Recent attempts have also been made by (among others) Burr ("Die Tontafeln von Pylos und der homericische Schiffs-katalog," *Festschrift des Peutinger-Gymnasiums Ellwangen* [1958] 71-81), by J. Kerschensteiner ("Pylostafeln und homericischer Schiffs-katalog," *Münchener Studien zur Sprachwissenschaft* 9 [1956] 1-33) and by L. R. Palmer ("Military Arrangements for the Defence of Pylos," *Minos* 4 [1956] 121-45) to extract geographical evidence from the Pylos tablets. All of these scholars are on less firm ground than Dörpfeld since they are apparently not familiar with Messenian topography and the archaeological evidence at first hand. For a much more realistic attitude on the part of scholars working in libraries with books and maps, cf. Page, D. L., *Homer and the Historic Iliad* (Berkeley 1959) 118-217, esp. 202, 214; also, in general Ventris, M. and Chadwick, J., *Documents in Mycenaean Greek* (Cambridge University Press 1956) 139-45 and *passim*.

⁶ The problem of re-locating sites previously discovered and reported in greater or less detail is often extremely time-con-

2. A *toponym* designates the site. Normally we record the name in popular usage for that particular spot, if we were able to get dependable information. A modern name of wider application (such as the nearest village) is sometimes chosen, particularly if a modern scholar has already used it to designate the same site. In general, the second type of name is added in brackets. On the thorny matter of spelling proper names we follow in general the system outlined in *BSA* 44 (1949) 331, 332.
3. Reference to site *plans* (illustrations in our text) and *photographs* or other illustrations (plates), if such are provided.
4. *Bibliography* concerning the discovery and important discussions of the particular site. A key to abbreviations which are used to refer to the commoner bibliographical items is found in the Select Bibliography. If no such reference is given, the implication is that as far as we know the site is newly discovered.
5. *General description* of the setting, and directions for locating the site, including compass bearings if needed and if useful sighting points could be

suming and exasperating. The difficulty is in part inevitable since no really accurate large-scale maps have ever been made of the district, and some areas have few distinctive landmarks. Native guides, with the best of intentions, are often uninformed and untrustworthy. Precise description requires a good deal of patience and print, and the original discoverer usually settles for a vague estimate of distance or time consumed to get to the spot from a known base, and an equally vague indication of direction. Local toponyms are handy, but informants can be confused on them or the traveler can get them wrong, or in the course of the years they may change. We submit that it is surely not too much to expect every topographer to carry a reliable compass and to be trained in the simple techniques of giving exact bearings by triangulation.

Even when one is sure that the site is found, difficulties are often not at an end. It may be that there are no sherds at all, or that the type previously reported cannot be found, or that one's estimate of the size or importance of the site differs drastically from that of the discoverer. We have decided in such cases that if we both concur in differing with the previous report, we should record our opinion. But we do so in the full realization that ours is no final judgment and that later research or excavation will inevitably modify our own results.

⁷ Some 8000 different place names have now been collected. The limited study so far devoted to them suggests that there are very few which are at all likely to have been in continuous use since the Bronze Age. But the material represents a fascinating historical record of subsequent invasions and occupations—classical Greek, Roman, Slavic, Byzantine Greek, Frankish, Venetian, Turkish, Albanian and neo-Greek. Quite apart from any bearing they may have on Mycenaean studies, the place names merit full-scale study and publication.

⁸ Present plans are to turn over all of our post-Bronze Age material for use in a publication planned by Dr. Yalouris.

seen. When elapsed time is used, reference is always to walking distance.

6. *Detailed description of the site (extent, altitude, surface indications, etc.).*

7. *Pottery summary and other artifacts.* Symbols for the various ceramic phases are as follows:

N	Neolithic	G	Geometric
EH	Early Helladic	A	Archaic
MH	Middle Helladic	C	Classical
LH	Late Helladic	H	Hellenistic
SM	Sub-Mycenaean	R	Roman
PG	Proto-geometric		

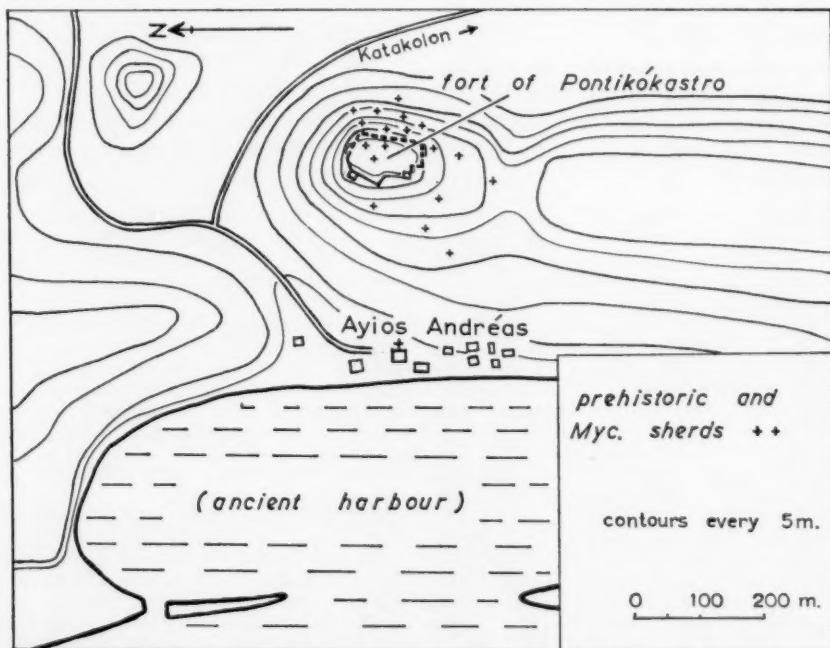
8. *General remarks and estimate of the importance of the site.*

1. *Ayios Andreas* (mediaeval Pontikokastro; classical Pheia). Ill. 1; pl. 76,a.

winds. The C site was apparently concentrated around the harbor. The fertile Mouria plain extends to the N-E and east. Bearings from south end of acropolis to Katakolon pier, 151°; to church of Ayios Andreas, 269°.

A natural acropolis (the mediaeval fort) ca. 40 m. high, precipitous to the north, steep to the east (terraced olives), fairly steep and much overgrown to the west. The upper level (enclosed by mediaeval fortifications) is ca. 115 m. N-S and 55 m. E-W. There was a lower fortified area to the south, ca. 100 m. N-S and 75 m. E-W. Prehistoric pottery is scattered on the top and slopes, especially on the east slope and the upper part of the south saddle. There are sporadic signs of LH occupation at least 100 m. further south and 150 m. further west.

N (Urfirnis) 1 frg.; EH(?) 2 hand-made frgs.; MH grey Minyan, matt painted, yellow Minyan; LH I-II 2 frgs.; LH III A-B many painted (lustrous) frgs. of very fine quality; SM; PG; G; A; C; H; R.



ILL. 1. Ayios Andreas (#1)

Sperling 82, #10; Philippson 346; Yalouris N., "Δοκιμαστική Έρευνα εἰς τὸν Κόλπον τῆς Φείας, Ἡλίας," *ArchEph* 1957 (1960) 31-43, figs. 8, pls. 12, and full bibliography cited there.

Ca. 1 km. north of Katakolon, the port of Pyrgos; on the north end of a long N-S ridge which forms the spine of Katakolon peninsula. The nearby harbor with sandy beach is fairly well protected against southerly

This was a very important and strategic site, intensively inhabited from MH onward. Probably its most flourishing prehistoric phase was in LH III A-B. Two characteristic Cycladic marble figurines (cf. Yalouris, *op.cit.* pl. 12) suggest a wide ranging trade already begun in Early Bronze. For important new evidence and conclusions about the history of the lower town in the Iron Age, cf. Yalouris' article, *passim*.

2. *Anemomilo* (Skaphidia)
Sperling 85, #35.

Ca. 1 km. S-E of Skaphidia village, on the S-W slopes of the range bordering the north side of Pyrgos plain. There is a monastery on the north slope and a fine sandy beach to the north.

A sprawling site ca. 150 m. from the shore. The total extent of sporadic occupation is ca. 300 m. E-W and 200 m. N-S. Most of the LH(?) sherds are on the south and S-E upper terraces. Some foundations of rough small stones can be seen in the west extension, along with rough gritty pottery and much obsidian.

in Pyrgos, 101° ; to center of Pontikokastro (#1), 251° .

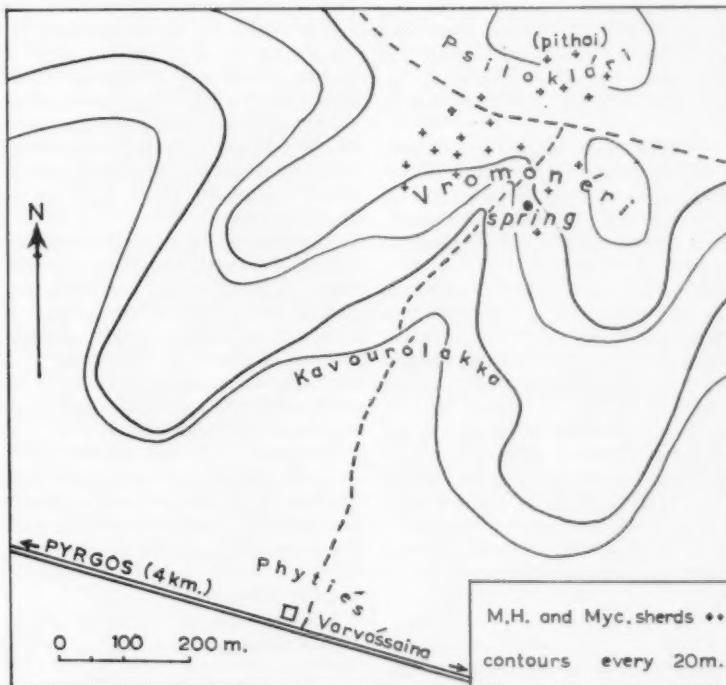
The site is on a much eroded southern slope of the sandy marl hills overlooking the Mouria marsh. Potsherds are scattered thinly over an area ca. 50 m. by 50 m.

The pottery is certainly Bronze Age. Reddish gritty fabric is probably EH; rough pink wheel-made sherds probably LH; some worked chert.

This was a small and quite unimportant site.

4. *Vromoneri* (Varvassaina). Ill. 2.

Ca. 2 km. west of Varvassaina village, on the upper



ILL. 2. Vromoneri (#4)

Obsidian and some smooth thin polished coarse ware are almost certainly EH. No pure "Mycenaean" wares were distinguished, but a class with buff fabric and dull monochrome black may be poor LH.

This was not an important site at any period, but it may have been of some strategic value since it commands a wide view of the coastline both to north and south.

3. *Sodhiotissa* (Ayios Ioannis)

On the ridge ca. 150 m. north of the tiny monastery (one nun) of Panayia Sodhiotissa, which is built into a cliff immediately north of the Pyrgos-Katakolon highway at a point ca. 800 m. west of the bus stop for Ayios Ioannis village. Bearings from site to metropolis church

slopes of the range of sandy marl hills to the north of the Pyrgos-Olympia highway; ca. $\frac{1}{2}$ km. north of and 80 m. above the edge of the plain. Bearings from the south end of the site to the metropolis spire in Pyrgos (ca. 4 km.), 263° ; to Kollirion church (ca. $1\frac{1}{2}$ km.), 318° .

The site is centered on a brackish spring (whence the name). Sherds are mainly in an area ca. 200 m. by 50 m. to the north and N-E of the spring and slightly above it. Sporadic sherds occur over a larger area extending north into a higher section called Piloklari.

Two frags. of high-swung handles of MH goblets (imitation Minyan); flat goblet base of reddish fabric (cf. ill. 8,A); several frags. from tall LH kylixes of soft buff fabric with bases hollowed at center beneath; frags.

in same soft buff fabric of monochrome kylix and deep bowl; at north of site frags. of large red pithoi.

This was a smallish site.

5. *Palaiopyrgo* (Salmone)

Sperling 82, #12; *Dörpfeld* 115; *RE VI*, 618; *Burr Abb.* 27.

Ca. 1 km. S-SW of Salmone (formerly Koukoura) village and 500 m. west of Salmone railroad station. Bearings from east edge of the site to Salmone village, 25°; to Salmone station, 80°; to church of Ayios Demetrios in Volantza (across the Alpheios), 152°.

One of a chain of low hills of conglomerate rock bounding the Alpheios plain on the north and immediately above (north of) the railroad line. The whole series is called Rachi. Palaiopyrgo is steep and isolated on all sides except the N-W. It is ca. 40 m. above the plain and extends ca. 300 m. E-W by 120 m. N-S.

Reports of the removal of many squared stone blocks are perhaps borne out by trenches at the east and west edges of the hill. Potsherds are extremely scarce and we found no definite Bronze Age material. There are C and H tiles and occasional black glaze fragments. Finding of a tear bottle is reported.

This is apparently the site which Dörpfeld and Burr believe was Homeric Thryon. Sperling is probably also referring to it, although his toponym "Gridou" is not known locally. Dörpfeld's report of prehistoric pottery is supported by the discovery nearby of a large pithos which should be MH. It lies on its side on a lower south slope ca. 600 m. to the west in an area called Kipaki in the property of Photios Arapis. Its approximate interior dimensions are: length, 1.70 m.; width, 1.35 m.; rim diameter, 0.57 m. Also, in summer 1960 construction of a new road uncovered a PG pithos burial at a spot called Bambakia immediately N-W of our site. Several vases were saved and are now in the Olympia museum.

6. *Etia* (Lantzoi)

Ca. 1½ km. N-NE of Lantzoi village and ca. ½ km. N-W of the ruins of a chapel of Ayios Ioannis (cf. *Sperling* 83, #16). It overlooks the Lestenitza valley to the south, and beyond it to the main Alpheios valley from which it branches. Bearings to church of Ayios Demetrios in Lantzoi, 193°; to chapel of Ayios Georgios (ca. 600 m. to N-E), 21°.

The hill is ca. 20 m. high with its long axis N-E by S-W and its total area is approximately 200 m. by 60 m. The owner is Demetrios Tsetsonis of Lantzoi. The high central area, ca. 100 m. by 30 m., is strewn with Mycenaean sherds and a fair number of good sized stones, apparently from foundations of buildings. A bronze double axe (now in the Olympia museum) was found here by the owner. There is a good spring just below the N-E edge of the hill.

Most of the sherds on the main part of the hill are certainly LH III B. Some are probably LH III A or even LH II. They consist mainly of kylixes with broad bases and tall stems in soft buff or pinkish fabric.

Some are painted in monochrome. Worked brown chert occurs. On the N-E tip of the hill there are sherds of C or H date, together with roof tiles.

A rather important site commanding the route up the Lestenitza valley, which is often associated with Nestor's pursuit of the Epeians (*Iliad* 11.754-58).

7. *Drouva* (Olympia)

BCH 83 (1959) 655.

Ca. 15 min. directly above (west of) the SPAP hotel and the museum in Olympia on a steep spur at the south end of the western ridge above the Kladeios valley. The northern part is still occupied by the old village which pre-dates the modern village of Olympia.

The spur is ca. 80 m. above the valley and approximately 150 m. E-W by 100 m. N-S. Trial pits and trenches were dug in 1958 by Yalouris both on the hilltop within the village area and on a small terrace ca. 300 m. below (east) near the path leading up from modern Olympia. Indications are that the settlement centered around the present chapel of Ayios Georgios. There are possible tholos tombs on the plateau ca. 500 m. to the west.

Trenches and pits revealed masses of undecorated LH III B pottery, now in the Olympia museum workrooms. It is of the same buff fabric as that, for example, at Etia (#6). There is much obsidian on the surface.

A very important site in a strategic position with a wide view over the convergence of the Kladeios and Alpheios valleys. Along with Ayios Elias (#14) on the south side, Drouva would seem to have controlled an important Alpheios ford.

Note: At a spot ca. 400 m. E-NE of the Olympia railroad station in an area called Asteri, the Kladeios has cut deeply into its western bank and is washing out potsherds dating from LH, C (?) and R times. This deeply buried site is most probably a cemetery.

8. *Altis* (Olympia)

Dörpfeld AM 31 (1906) 205-18; 33 (1908) 185-92; *Alt-Olympia* I, 73-102; 284; *ibid.* II *Beil.* 1-4, *Taf.* 1, 17.

In the lower levels of the Altis in the vicinity of the Heraion.

MH apsidal houses (cf. Thermon in Aetolia—*Arch Delt* I [1915] 223-79; II [1916] 179ff). Pithos burials with slab or tile covers (cf. #43, #50).

Pottery with spiral decoration on Minyan (*Alt-Olympia* II, *Taf.* 22; cf. Thermon); mainly MH coarse ware, much of it similar to the "Adriatic ware" described by Valmin in pp. 48-57 of *Das Adriatische Gebiet* (Lund & Leipzig 1939) cited henceforth as *Ad. Gebiet*.

The Olympia complex includes sites #7 and #9. The continuity from MH through LH has very important implications for the prehistory of the cult. In spite of persistent opinion to the contrary, it is now clear that the lower Alpheios valley was heavily populated in the Late Bronze Age.

9. *Oinomaos* (Pisa)

Dörpfeld 137; also *AM* 33 (1908) 318-20; *Alt-Olym-*

pia I, 273-75; *ibid.* II Beil. 23, 24, pls. 1, 23; *RE Suppl.* VI, 607; *Sperling* 83, #24.

A steep conical hill of conglomerate rock ca. 1½ km. east of Olympia and immediately north of the Olympia-Tripolis highway, just east of the fork which leads to Kalavryta. Bearings to chapel of Ayios Georgios, Drouva, 273°; to monastery of Ayios Elias, Makrisia, 232°.

The hilltop is ca. 60 m. above the river and is now covered with pines. The fairly level upper surface where Dörpfeld excavated is ca. 80 m. E-W by 60 m. N-S. There are sherds on the top and on the upper north and south slopes, and some on the lower south slope. A spring is located ca. 800 m. to the N-E on a slope overhanging the east fork of the Miraka stream and just west of Miraka village.

Pottery from this site includes matt-painted and incised fabrics (cf. #34 [pl. 78c, #6] and 52; *Valmin* pp. 52, 53). Two sherds marked "Pisa" in the collection of the British School at Athens are from a MH carinated goblet with loop handle imitating yellow Minyan (cf. ill. 8,I) and a LH III B kylix in soft buff clay with dullish black linear bands. Our own material includes a MH loop handle and typical MH coarse ware, but nothing which appears Mycenaean.

This was a small MH habitation site, but it is questionable whether it had much importance in the later Bronze Age, especially in view of the big Mycenaean site (#7) nearby. Immediately north of the highway and ca. 500 m. to the east in an area called Frangonisi there is a cemetery with tile-built graves of R times, and remains of C and H houses have been found nearby. This may be the general area of the historic Pisa.

Note: Sperling's separate entry (p. 84, #25) for Meraka (properly Miraka) is apparently in error. We could find no traces of a Bronze Age settlement on the "west side of the west fork of the Meraka stream." Such a site would be only 500 m. from Onomaos hill.

10. *Tourla* (Aspra Spitia)

Sperling 86, #38.

Ca. 3 km. S-E of and below the village of Aspra Spitia, on a point of land just N-W of the confluence of the Erymanthos and Alpheios rivers. Bearings to Ayios Georgios church in Aspra Spitia, 326°; to confluence of rivers (1½ km.), 152°; to center of Tripiti village (#18), 190°.

Magoula-shaped hill ca. 45 m. in diameter on the north edge of a long plateau which stretches down to the Alpheios. Below the hill there is an easy slope to the south, ca. 150 m. E-W by 120 m. N-S in extent. A good many stones, no doubt from prehistoric house walls, are in evidence. Pottery is spread sparsely for ca. 200 m. by 150 m. There is a big cut in the top of the hill which is said to have been made by German archaeologists before World War I. And there are still rumors in the village that heads of statues and a bronze helmet were found. A small spring is located ca. 800 m. N-W of the site at a spot called Neraidhosilia.

Sperling noted EH and LH pottery, as well as C and H. Our own sherds include fragments resembling

MH from Pisa and some which might be LH, but nothing specifically EH. We also got H sherds and saw many C or H tiles.

Sperling rightly emphasizes the strategic position of the site, facing #18 across the Alpheios. But the country hereabouts is poor agriculturally and this was undoubtedly a small and rather isolated site.

11. *Palaiokastro* (Tripes)

Meyer, *Peloponnesische Wanderungen* (1939) 106, fig. 8; *BCH* 80 (1956) 522-46 (esp. fig. 18); *JHS* 78 (1958) Suppl. 11; cf. also *Paus.* 8.26.8 [Bouphagion?] and Frazer, *Pausanias' Description of Greece* IV, 301-04.

An acropolis above the old village of Tripes dominates the right bank of the upper reaches of the Alpheios in Arkadia. Chamber tombs indicate a very large Mycenaean cemetery. There was also habitation in the C period. This is a strategic position controlling important converging land routes.

Note: We did not visit this site.

12. *Ayios Georgios* (Epitalion). Ill. 3

Curtius and Adler, *Olympia, die Ergebnisse* I, 12; *Dörpfeld* 100, pl. iv; Meyer 49, 50, 60; Philipson 360.

After crossing the Alpheios bridge, the railroad and highway run parallel to a range of hills flanking the Alpheios valley on the south, and swing S-W through a pass which leaves on the right (N-W) a group of four hills forming the west end of the range. Modern Epitalion is ½ km. below (S-E of) the group of four hills which are called Ayiorytitika (from a chapel of Ayios Georgios on that to the S-W).

The furthest S-E of the four hills, called Tou Barkou to Vouno (cf. C on ill. 3), is immediately above (N-W of) the railway. Its height is ca. 40 m. and the area on top ca. 60 m. by 50 m. The rock is a soft sandy marl, ideal for cutting chamber tombs. There are indications of collapsed and ruined tombs on the north and especially the east slopes. The situation is confused by extensive trenches and gun emplacements constructed during World War II. Many displaced medium-sized stones may be blocking stones from dromoi of destroyed chamber tombs.

Many good LH III A-B sherds on the north and east slopes; kylix frgs. with red monochrome paint on soft fabric; one frg. of a krater with figured decoration (part of bird; cf. ill. 8,F) which is close to Furumark's fig. 31 Mot. 7, #45 (LH III C:1) and fig. 30 Mot. 7, #32 (LH III B). Probably LH III B are sherds from kraters, jars and jugs with streaky black monochrome paint on smoothed buff surface; also plain buff coarser ware of similar shapes; bases of tall kylixes of hard buff or reddish fabric with broad flat bases hollowed in center beneath; some frgs. with linear bands of orange paint on polished buff fabric.

This pass is an extremely strategic one. The so-called Strongilo to the west of the four hills is low, marshy and unsuitable for traffic. There is little doubt that the main coastal route has always followed the present

highway and railroad. It is significant that a ford across the Alpheios, marking the former main road to Pyrgos and the site of the new highway bridge, is situated almost directly north of the pass.

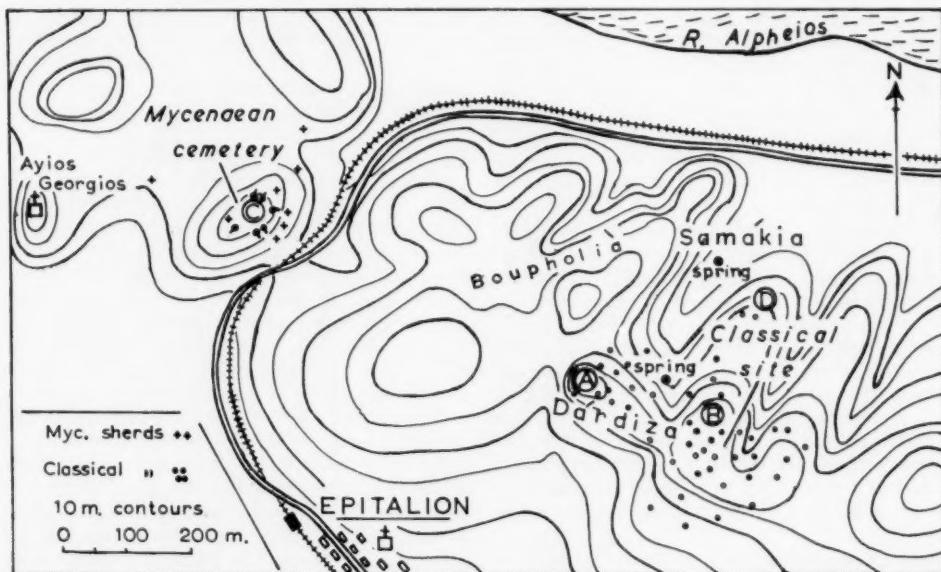
13. *Dardiza* (Epitalion). Ill. 3.

Meyer 50, 60 and literature cited there; *BCH* 83 (1959) 632.

The site is approximately equidistant from Epitalion (formerly Agoulinitsa) village which is ca. 400 m. to the S-W, from the cemetery described above (#12) lying almost due west, and from the highway down in the Alpheios valley to the north. It is somewhat more accessible from the latter direction, approached through

and tiles from A (a few sherds probably of 6th century), C and H periods with good black glaze. At one point a short stretch of neat wall 0.46 m. wide built of squared poros blocks (probably late C) appears above ground (ill. 3, point B). A broken terracotta perirrhanterion (C or H) was recently turned up at point D, ill. 3, in the course of building a threshing floor. The fragments are now in the Olympia museum.

This was a large town with an excellent view overlooking both the Alpheios valley to the north and the wide Agoulinitsa plain to the S-W. Its strategic position, controlling the main pass to the west, has been stressed in discussing #12 above. It must be given serious consideration in placing the long-sought classical Epitalion.



ILL. 3. Epitalion (#12)

the area marked Samakia (ca. 1½ km. west of the Alpheios bridge). From the highest point (marked A in ill. 3) compass bearings to Epitalion church, 232°; to Alpheios bridge, 33°; to chapel of Ayios Georgios, 285°.

Potsherds and broken tiles are scattered over a large area, at least 350 m. E-W by 150 m. N-S, on the highest section of the ridge, as much as 70 m. above the Alpheios. The soil is a fertile sandy marl, much of it now planted with olives and vines. At the N-W of the inhabited area there is a small acropolis (marked A on ill. 3) ca. 40 m. N-S by 130 m. E-W. Its south, west and north slopes are steep, and it is connected to the rest of the site by a saddle at the east. The less heavily occupied area called Samakia includes the lower slopes to the N-NE of the site where two good springs are located.

The site is strewn with masses of broken pottery

(In *Meyer* 60 the equation is spoken of as "certain"). A more controversial problem concerns the Mycenaean habitation site which should have been situated reasonably close to the cemetery (#12). The small acropolis (marked A on ill. 3) at the west of this site is by all odds the most likely candidate. We found no certain prehistoric sherds here or elsewhere on the site or in the vicinity, although on the slopes of the acropolis there are monochrome pieces painted on soft buff fabric which may well be LH. It may be worth while to mention that the modern toponym Samakia has exactly the same connotation as Homeric Thryon or Thryoessa, i.e. a marshy or reedy spot. While we do not propose to argue here the exact location of Homeric Thryon, we do feel it necessary to register disagreement with the view that it was on the north side of the Alpheios.

14. *Ayios Elias* (Makrisia)

Meyer 47, 48, 65, pl. 57.

A fine acropolis ca. 700 m. west of Makrisia village with a commanding position approximately 1 km. south of and ca. 130 m. above the Alpheios. Compass bearings to Makrisia church, 88°; to village of Ladikou (across Selinounta river), 247°; to Kania cemetery (#15), 317°.

The total area of the hilltop is ca. 100 m. E-W by 80 m. N-S. The summit is occupied by the church and convent of Ayios Elias. There are fairly steep slopes, particularly to the north and west. The whole site is strewn with sherds. A good spring is available toward the east, just north of Makrisia village.

Most of the surface pottery is LH III B, but there is some admixture of MH (?) coarse ware; frgs. of kylixes and angular bowls in soft buff clay (cf. Furumark's fig. 17, #257); several early looking horizontal handles of large jars; worked flint and obsidian. *Meyer* (p. 48) speaks of "sparse pottery finds, mostly uncharacteristic wares, but stretching from classical to Roman times." We saw no fragments certainly attributable to the Iron Age. *Meyer* (*ibid.*) also refers to "many late and sub-Mycenaean sherds from graves" at the west edge of the acropolis.

This is a big site, situated across the Alpheios from Drouva (#7). The two sites in all probability straddled an important river crossing, and there is a small punt now used for ferrying at this point.

15. *Kania* (Makrisia)

Ergon (1954) 41, fig. 51; *JHS* 74 (1954) 156; *BCH* 78 (1954) 128-31; 79 (1955) 253; *AJA* 58 (1954) 235.

Ca. 2½ km. W-NW of Makrisia village, the lowest spur of the ridge west of the Selinounta river extends east into the valley. Bearings to Ayios Georgios chapel, Drouva, 53°; to monastery of Ayios Elias (#14), 137°.

In the S-E slope of the spur Yalouris cleared two chamber tombs. The dromoi face S-SE and the tombs are ca. 16 m. apart. Another collapsed chamber tomb can be seen ca. 15 m. above those excavated, and a fourth ca. 30 m. above and N-W. There was almost certainly a large cemetery in the vicinity.

Sherds from the immediate area are from LH III B kylixes and kraters. One frg. is similar to Furumark's fig. 15, #295. The contents of the tombs are dated in LH III A-B, which agrees with the tomb architecture. Amphoras and glass paste beads figured in *BCH* 78 are reminiscent of "Achaean" things (now in the Patras museum) from sites such as Lopesi.

This cemetery should almost certainly be associated with the Ayios Elias habitation site (#14). References to a habitation site at or near Kania seem to be in error. We have examined the surrounding area carefully and found no surface sherds. A small hill called Gialvoros near the Selinounta bridge on the Makrisia side of the river is said to have Mycenaean sherds and could possibly be the site of a tomb or tombs. But it can hardly have been a habitation site of any importance because of its closeness to Ayios Elias. A classical site of some extent was discovered by Yalouris on a hill called Skala

ca. 800 m. N-W of the Kania tombs and immediately overhanging the Alpheios.

16. *Yerakovouni* (Makrisia)

Ca. 2 km. E-NE of Makrisia village and ca. 400 m. south of the track leading from Makrisia to the Alpheios crossing mentioned above under #14. Bearings to Ayios Georgios chapel, Drouva, 352°; to center of ancient Olympia, 15°.

This is an isolated hill ca. 50 m. above the plain, planted mostly in grain but with two uncultivated rounded knobs, one at the south summit and the other on the upper north slope. Pottery is scattered over an area ca. 80 m. N-S by 50 m. E-W on the N-W and upper west slopes. Another smaller concentration occurs in an area ca. 50 m. in diameter on the lowest north slope and only ca. 15 m. above the plain. Ca. 20 m. N-W of this latter area there is a small spring which, like the river flowing to west of the site, is called Varkos. A larger spring called Sklava is located ca. 600 m. to the N-E and not far from the Alpheios (bearing to Ayios Georgios, Drouva, 342°).

Most of the pottery is coarse and of poor quality. Finds include rim of MH (?) goblet in red micaceous clay and base of a similar goblet in buff clay; stem of LH III kylix; 2 handles of kraters, probably LH.

This would seem to have been a small farming community only. It is probably the spot referred to in *Meyer*, p. 47, "ca. 2½ km. east of Makrisia at the foot of an isolated hill." Two LH I vases (now in the Olympia museum) found at Raza which is not far S-E of Sklava spring may be from a tomb connected with this site. Yalouris also reports LH III B potsherds in the vicinity of Bambes (for this primarily A and C site, cf. *Ergon* [1956] 83-88).

17. *Koutsochira* (Diasela)

Ergon (1954) 87, 88, figs. 85, 86; *BCH* 80 (1956) 287, figs. 8, 9; 81 (1957) 574-79, fig. 17; 83 (1959) 658; *JHS* 76 (1956) Suppl. p. 17; 77 (1957) Suppl. p. 15.

About 1 hr. N-W of Diasela (formerly Broumazi) in the fertile valley of the river Kovitsa not far from its confluence with the Alpheios. The site is a low hill ca. 130 m. E-W by 100 m. N-S. It lies ca. 800 m. east of the river Kovitsa and ca. 2 km. south of the Alpheios. Compass bearings to nearby (300 m.) chapel of Ayios Athanasios, 208°; to church of Ploutochori (ca. 2½ km.), 308°; to chapel of Ayios Elias (ca. 1 km.), 103°.

Yalouris dug three collapsed chamber tombs in the lower south slope (dromoi not cleared). There are two possible tholoi on top of the hill and some surface sherds in the intervening upper southern slopes. Traces of the contemporary habitation site with heavy fortifications.

Surface sherds include one fragment C black-glaze; several fragments C tiles with streaky purple paint; LH III B-SM. The contents of the tombs, now in the Olympia museum, are mainly LH III B-C, but a few items might be LH III A. There is a strong resemblance, in general, to material from the Kania tombs (#15).

This is not a very impressive site and the settlement

was probably of quite moderate size. The key to its location may hinge on a river ford.

18. Kastro (Tripiti)

Sperling 81, #5; Dörpfeld pl. iv; Meyer 40, 41, 69, pl.

52.

On the summit of a hill immediately above and S-W of the village of Tripiti, formerly Bitsibardi.

A fine acropolis with very extensive and easy northern and eastern slopes. The well defined upper area is ca. 150 m. E-W by 25 m. N-S. Two good springs are located at Palati (mediaeval Isovà) ca. 2 km. to the N-NW of the Kastro and much lower. On an intervening knoll called Ayios Elias a line of large squared blocks have been cleared in an effort to remove them.

On the acropolis and its lower eastern slopes there are abundant C or H tiles, several squared blocks and column drums. The potsherds are predominantly C and H. We found no definitely prehistoric pottery anywhere in the area above (west of) the modern village.

We are not sure whether this is the exact site where Sperling found "a few fragments—similar to the MH ware of Olympia, and some that are apparently LH." Sperling's toponym, Perivola, is not locally used for the acropolis area but for a section considerably lower and further east (i.e. south of the village) where we found no ancient sherds.

Demetrios Photopoulos of Olympia who accompanied Sperling on his visit confirms that it was only on and near the Kastro that prehistoric pottery was found. Meyer, p. 41, asserts that Sperling's site is "on the most easterly summit of the ridge, the first above the village," and reports that he himself found a "late Mycenaean handle" there. Tripiti is directly across the river from #10 and, according to Sperling's ceramic evidence, there would seem to have been a ford at this point in prehistoric times.

19. Klidhi (Derveni). Ill. 4; pl. 76,b

Dörpfeld 111-14; AM 33 (1908) 320-22; Sperling 82, 87, #11; RE Suppl. VI, 607; JHS 76 (1956) Suppl. p. 17; BCH 79 (1955) 253-54; 80 (1956) 290; Meyer 75, 76, plan v; Philippson 360-62.

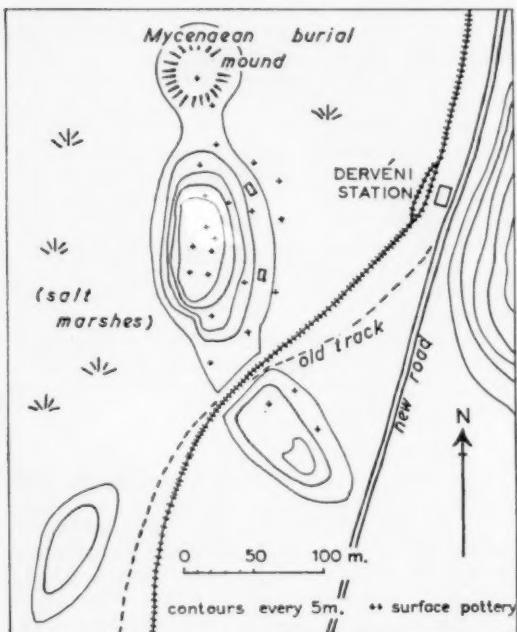
A low isolated hill in the coastal plain ca. 100 m. west of the Derveni (Kato Samikon) railroad station. About 150 m. S-SW of the station the railroad line cuts through its S-E end. Just across (east of) the highway from the station rises the steep hill on which is the fortress of Ano Samikon.

The hill has a maximum height above the plain of ca. 25 m. The total length (including the section S-E of the railroad) is ca. 300 m. NW-SE and the maximum width is ca. 50 m. A large tumulus ca. 50 m. in diameter and ca. 5 m. in preserved height (before excavation) forms a kind of extension of the site immediately to the north.

The rich material from Yalouris' excavation of the tumulus is in the Olympia museum. Sherds of excellent quality which we collected on the surface include fragments of EH "faience" ware (grey-blue slip on orange fabric) from sauce-boats and shallow bowls; EH "ur-

firis" pedestal foot from sauce-boat or bowl (cf. ill. 8,L) comparable to material from the Skala plain in Lakonia; MH imitation Minyan and "light-on-dark"; LH I-II-III, esp. LH III B fragments of kylixes and kraters; much MH and LH coarse ware. The Cyclopean fortification wall recorded by Dörpfeld is no longer visible, but a good number of scattered large stones may well have belonged to fortifications rather than buildings.

The strategic location of this site in terms of controlling coastal traffic has been rightly emphasized in previ-



ILL. 4. Klidhi (Derveni) (#19)

ous literature. Dörpfeld's identification of this as the site of Homeric Arene has been generally accepted.

Note: At Ano Samikon ca. 1 km. above (east of) Klidhi are the classical fortifications published by H. L. Bisbee (*Hesperia* 6 [1937] 525-38; cf. also Sperling 85, #34). Although we found the base of a LH III B kylix of plain white polished ware on the summit of the fortified area, it is unlikely that there was a prehistoric settlement here. The Mycenaeans may, however, have used the height for a watchtower or lookout in conjunction with the settlement below.

20. Nestora (Kakovatos)

Dörpfeld, *passim*; AM 32 (1907) i-xvi, esp. sketch p. viii; AM 33 (1908) 295-317; Müller K., AM 34 (1909) 269-328; McDonald W., AJA 46 (1942) 538-45 and literature cited there; Sperling 81, 82, #8; Meyer, "Pylos und Navarino," *Museum Helveticum* 8 (1951) 119-36; Philippson 363.

A small acropolis (called Ktiria before Dörpfeld's

excavations) on the S-E edge of the fertile coastal plain, ca. 1½ km. E-NE of the village of Kakovatos and approx. 2 km. inland from the present coast.

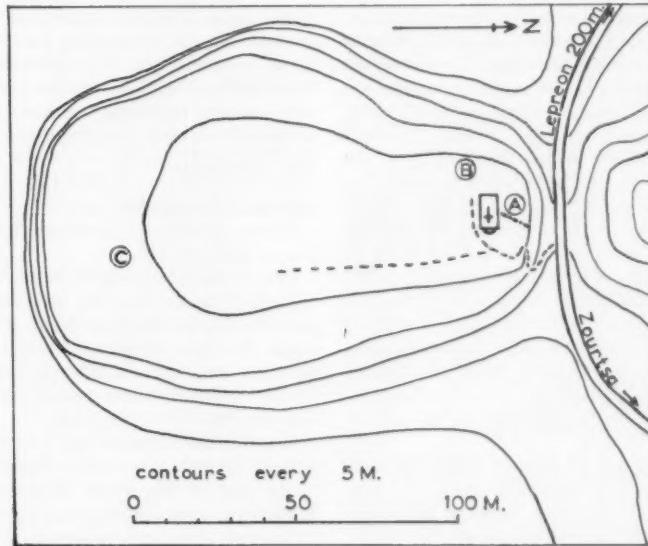
The acropolis, ca. 40 m. above the plain, is fully described by Dörpfeld. It has fairly steep slopes, very much eroded to the south. On the north side are gentle terraces below (west of) the tholoi. The summit is much eroded and now thickly overgrown. Heavy blocks still visible at the N-W could be from fortifications (or perhaps Dörpfeld's "palace").

Surface pottery is very scarce. From MH, fragments of horizontal handles of jars in coarse, gritty fabric; part of vertical handle of goblet (imitation Minyan). From LH I-II (?) 2 sherds from stemmed bowls of soft

Note: It is in fact quite possible that there was another site of at least moderate size toward the north edge of the plain. The modern village of Zacharo, built on an isolated hill and with an adequate spring, could be considered as a candidate. Mycenaean sherds are reported from the area of the lowest houses at the south edge of the village. Cf. *Philipsson* 364.

21. *Ayios Demetrios (Lepreon)*. Ill. 5; pl. 76,c
Sperling 86, #37.

A fine acropolis at the south end of a limestone spur just east of the village of Lepreon (formerly Strovitsi). It overhangs a deep and fertile valley. The road leading east to Zourtsa cuts through the saddle connecting the



ILL. 5. *Ayios Demetrios (Lepreon) (#21)*

buff fabric with orange monochrome paint. Particularly important is the evidence that there was a good-sized lower town on the N-W slopes. The inhabited area of at least 200 m. E-W by 90 m. N-S is strewn with smallish stones (presumably from house foundations) and some MH and LH sherds. Such a situation is not made clear by Dörpfeld and is specifically denied by Sperling. But a group of sherds from the 1908 excavations and marked "Unterburg" include many typical fragments from LH III B deep bowls, stemmed bowls and kylikes, both painted and plain, of average to good quality.

This site with its acropolis, lower town, and LH I-II tholos tombs, must now in the light of Blegen's excavations in Messenia take its place as just one of the numerous local capitals of the later Bronze Age (cf. Section III). Prosperity was assured by its control of the extremely fertile and relatively wide coastal plain extending some 7 km. north to the Kaiapha vicinity.

site with the northward continuation of the spur which joins a higher ridge bordering the valley on the north. On this higher E-W ridge (immediately above—i.e. north of—the modern village) are the ruins of the upper section of classical Lepreon (cf. *Sperling* 83, #19).

An eminently defensible acropolis, particularly steep at the south where it falls sharply down to the valley. The east and west slopes are also relatively high and abrupt. At the north end, where the chapel of Ayios Demetrios is located (A on ill. 5), there is a fairly easy descent to the highway. It has a level top, approximately 150 m. N-S by 100 m. E-W.

The northern area is very thickly strewn with prehistoric sherds, while C-H predominate in the southern section. At B on ill. 5 erosion reveals a stratum of dark reddish earth (apparently burnt) ca. 2 m. below the modern surface. Many MH sherds are concentrated here. To EH belong: fine slipped varieties including

"faience" wares (as at Klidhi, #19), "yellow mottled ware" (Zygouries Class A II) and "Urfirnis" (Class B II). Among the latter are the high pedestal feet (cf. ill. 8,M). Shapes are mainly sauce-boats and shallow bowls. Typical are "EH II" rims from large bowls and pithoi, with finger impressions. Representing MH are: grey Minyan, 3 sherds; yellow Minyan, 3 sherds, including 2 frgs. from small carinated goblets with high-swung handles and one with a decoration of incised circles (ill. 8,B); matt-painted, part of loop handle of carinated goblet or small cup ("MH III"). Possibly MH are: base of high-swung handle of goblet with vertical zig-zag pattern (pl. 78,c,#8; ill. 8,A) and incised coarse ware similar to *Asea* fig. 105. Probably LH II-III A is part of handle with spiral pattern and a sherd with "sacral ivy" pattern (Furumark's Mot. #12); 2 LH III A-B sherds from low-stemmed goblets with monochrome paint, as well as 3 sherds from plain kylixes of soft buff fabric and polished. Some late C to H sherds of average to poor quality. In the southern section one can see carefully sawn limestone blocks of C-H public buildings, many disturbed but some *in situ* (cf. A and especially C, ill. 5) where recent illicit digging has revealed wall foundations of a large building, including a threshold block with cuttings for a door. On a lower plateau just east of Ayios Demetrios a good deal of unauthorized excavation is going on among ruins of C, H and R (?) periods. A large water conduit, partly rock-cut and partly slab-lined, is exposed. It leads south from the direction of the ridge on the north side of the valley. A cement-lined settling basin (?) somewhat further south may have been connected with this system. There are also remains of the lower part of houses cut in the rock and with walls decorated in red stucco (as at Olynthos).

This site was a major one all through antiquity, with a floruit in EH (as Sperling realized) and C-H times. In the latter period the main town seems to have been on the higher ridge on the north edge of the valley, but there must have been a considerable lower suburb on the Ayios Demetrios site and east of it.

22. *Kastro* (Kyparissia). Pl. 76,d

Andrews K., *Castles of the Morea* (1953) fig. 89, pl. xviii; *Ad. Gebiet* 39; *Études* 131; *Praktika* (1911) 247-52; *Philippson* 377, 378.

An impressive acropolis approximately 1 km. from the sea at the eastern edge of the large modern town of Kyparissia. The shore is sandy and a projecting spit provides the little harbor with some protection from S-W storms.

The acropolis is very rocky and sheer, especially at the north. It is connected by a saddle with higher hills to the east. The flattish top is ca. 150 m. N-S and varies in width from ca. 50 m. (at the west) to 80 m. (at the east). There are fairly easy slopes on the south where the mediaeval village was concentrated. The acropolis commands a wide view along the coast, especially toward the north.

Ancient surface sherds are extremely scarce. Valmin reports matt-painted and Mycenaean pottery on the

north slope, together with large sherds of "Adriatic ware" and "Feuersteinsplattern." A section of ancient wall (late C?) is preserved on an upper terrace of the north slope. More ancient sherds appear in this vicinity than elsewhere. Our finds consist of one frg. of a MH grey Minyan carinated goblet with ring foot (ill. 8,K); base of stemmed goblet (MH-LH I) of coarse fabric; two sherds of soft buff fabric, possibly from Mycenaean kylixes; 3 frgs. of obsidian. Kyparissia discovered a Roman construction just N-W of the modern town in areas called Mousga and Phoros, and we saw sherds of the same period (including Arretine ware) in the open area north of the railroad station.

In spite of the scanty ceramic evidence, the nature and location of this acropolis with a usable harbor and a small but fertile plain to the north indicates that it was a major habitation center in the Bronze Age. There is no strong reason to doubt that this is the site of the town mentioned in the Homeric catalog and in the Pylos tablets. Intensive occupation in mediaeval and early modern times may be mainly responsible for the dearth of evidence for earlier settlement. Cf. #79 and Appendix (C).

22(A). *Mouriadatha*

Nestor (newsletter circulated by E. L. Bennett, Jr.) 5 Nov. 1960, p. 116.

For the sake of completeness, we feel it necessary to include under this and the following entry two important discoveries made by Marinatos in his 1960 campaign. We have not seen the sites. The approximate locations have been added in plate 74, but we have not enough information to include them in the Summary List of Sites.

"In the Messenian aulon . . . I found an entire Mycenaean stronghold near the village Mouriadatha, 9 km. to the east of Kyparissia, in a mountainous district. There were abundant traces of Cyclopean constructions, among which were a megaron with beautiful floor of plaster and another similar construction which may be a temple. A tholos tomb, well preserved, but plundered, was excavated there. I called the site tentatively 'Amphigeneia.'"

22(B). *Moira*

Nestor loc.cit.

"About 8 km. to the north-west [presumably N-W of Mouriadatha, although our maps and the sketch in *Nestor* show Moira N-NE of Mouriadatha] . . . a magnificent monument, a tholos 12 m. in diameter, with the façade in ashlar masonry of poros, and with two Minoan A signs, which are mason's marks, I believe. It is of course plundered. It will be excavated next year, as the huge lintel is in danger. The interest of the tomb is that, although a member of the third category of Wace's classification at Mycenae, it contained in the dromos and in the filling of the tholos as far as it has been excavated, only LH I/II and matt-painted pottery, together with the coarse black, partly incised local ware, the so-called 'Adriatic' element of Valmin."

23. *Akourthi* (Kopanaki)

BullLund (1927/28) 31-54, fig. 5; *Études* 79-81, figs. 13-15.

Three tholos tombs lie close together immediately south of the railroad line at a point ca. 2 km. west of Kopanaki village center.

The two northern tombs were examined by Valmin. The easternmost (A) is ca. 200 m. south of the railroad line. Bearings to the summit of Stylari acropolis (ca. 3 km.), 80°; to church of Ayios Georgios, Kopanaki, 85°. It was only partially opened. The westernmost (fully excavated) tomb (B) is ca. 40 m. west of (A). Bearing (A) to (B), 260°. The southernmost (unexcavated) tomb (C) is ca. 100 m. S-SW of (B).

The earliest burials in (B) belonged to LH II and early LH III, but a "hero cult" continued until C.

These tombs are near the western edge of the Soulima (Kochla) plain and probably lie on the line of an ancient route from Kyparissia to Dorion (#27). The nearest known habitation center is Stylari (#24). Cf. *Philipsson* 368.

Note: Valmin's fig. 3 in *Swedish Messenian Expedition* and fig. 5 noted above are wrong in placing these tholoi south of the highway from Kopanaki to Kyparissia. They actually lie between the railroad and highway.

24. *Stylari* (Kopanaki)

Études 79-81, figs. 13-15; *BullLund* (1927/28) 31.

A prominent acropolis ca. 1 km. E-NE of Kopanaki village. Bearings to Ayios Georgios church, Kopanaki, 244°; to center of Aetos village, 172°.

The hill is ca. 75 m. by 75 m. in upper area and ca. 50 m. above the plain. A well preserved section of H fortification still stands along the north edge. The whole hilltop is occupied by a small modern village. Many sherds are scattered on the easy west, south and S-E slopes for an extent of ca. 500 m. by 150 m.

MH or LH: 2 bases of stemmed bowls and several typical handles of jars in coarse ware; rims from deep bowls or goblets. LH II-III: 4 frags. of long-stemmed kylixes. LH III: hind quarters of animal figurine in soft buff clay. Several C and H sherds.

Valmin does not make it clear that there was a large settlement on the acropolis. He reports a much destroyed tholos on the south slope but we could see no sign of it. The other three tholoi (#23) may also have been associated with this habitation site. Stylari is well situated to control the western section of the Soulima valley.

Note: In *BullLund* (1925/26) 89 Valmin mentions a probable tholos mound in an area called Feretze. This periphery is ca. 4 km. east of Kopanaki and 1 km. west of Dorion village on both sides of the highway. We could not locate the mound and local inhabitants do not know it.

25. *Panayia* (Chrysochori)

Études 103-04.

Chrysochori village lies at the north edge of the Soulima valley and ca. 7 km. from Kopanaki. The chapel of the Panayia is in the periphery called Klissa-

kouzia, ca. 2 km. N-E of and above the village. Bearings to Klesoura village, 172°; to Kokla village, 180°; to Soulima village, 243°.

The chapel commands a fine view southward over the whole plain. A fairly copious spring under the chapel issues at a point 10 m. to the south. Sherds are scattered on terraces to the west and south of the chapel over an area ca. 250 m. E-W by 150 m. N-S.

Some of the coarse ware might be Late Bronze but most of the pottery is C or H. Valmin reports "tessons des tous époques depuis le mycénien," but we found no definitely prehistoric pieces.

This was probably not a site of great importance at any period.

Note: There is a copious spring at Koprinitsa, on the road from Dorion to Psari (cf. *Études* 104). On the opposite side of the road is the chapel of Ayios Konstantinos on the east slope of a little hill called Kondra. We saw a few probably Bronze Age sherds on the south slope.

26. *Ayios Demetrios* (Aetos)

BullLund (1925/26) 57; *Études* 104, 117.

Aetos is a large village on high ground above the southern edge of the Soulima valley. Its excellent water supply, called Kephalovrisi, is at the N-W edge of the village and the church of Ayios Demetrios is at the S-W edge.

The extensive terraced gardens below the church are strewn with ancient pottery. The "Cyclopean" wall mentioned by Valmin lies ca. 60 m. south of the church and can be traced for ca. 50 m. in an E-W direction. In places three and even four courses are preserved under a modern terrace wall. Construction is of large rough-hewn blocks, with small stones sometimes used in the interstices.

Valmin reported pottery "from Mycenaean down to Byzantine times," but we found none certainly earlier than C or H. Architectural members of C and later times are to be seen in the village. The wall could possibly be prehistoric.

The site of the ancient town was no doubt exactly on that of the modern one. The Kephalovrisi source is the most plentiful in the whole plain. This could well be the site of classical Dorion. In spite of our failure to get definite ceramic evidence, Bronze Age habitation here is very likely.

Note: Valmin (*loc.cit.*) reports "late Mycenaean sherds" at the village of Vidhisova ca. 3 km. east of Aetos. Vidhisova has a good spring called Drosopigi, but the soil thereabouts is infertile and the situation on a rocky hillside does not seem suitable for a large Bronze Age center. The nearest good agricultural land would be more naturally controlled by the Malthi-Dorion acropolis. Antiquities reported in the vicinity are apparently Byzantine or later. Search revealed no ancient pottery.

27. *Malthi* (Dorion)

BullLund (1925/26) 60-89; *Swedish Messenia Expedition* (Lund 1938) *passim*, especially fig. 3; *OpAth* 1 (1953) 29-46.

A prominent acropolis approximately $2\frac{1}{2}$ km. west of the Vasiliko railroad station, at the S-E corner of the Soulima valley within reasonable distance of the main route connecting the valley with the Stenyklaros plain.

A large fortified acropolis with lower town and two tholos tombs at the foot of its west slope.

Pottery and constructions on the acropolis are mainly LH II-early III B, but evidence is claimed for habitation in all periods from the neolithic onward. Weinberg (*AJA* 51 [1947] 172) says there is no "EH I" and that N lasts through to "EH II" (cf. Leprecon). The MH phase was apparently much more important than EH. The tholoi are dated "just before 1300," i.e. near the beginning of LH III B.

This is a well-preserved and reasonably important settlement with considerable strategic value in controlling an important E-W land route. Valmin has made a good case for equating it with the Dorion of the Homeric catalog.

28. Xerovrisi (Vasiliko)

BullLund (1925/26) 88-89; (1927/28) 20-54, especially fig. 5.

Valmin excavated a tholos tomb located ca. 1300 m. S-E of Vasiliko railroad station and immediately north of the railroad line. The guardhouse of Xerovrisi is ca. 40 m. to the west and the marker indicates 9.2 km. west of Zeugolatio. Bearings to Kastro Mila (ca. $1\frac{1}{2}$ km.), 183°; to Malthi-Dorion acropolis (ca. 4 km.), 318°.

The tholos was constructed in the south side of a small hill. A second "big" unexcavated tomb is mentioned by Valmin ca. 250 m. S-W (following fig. 5; in the accompanying text the direction is given as N-W) in a small valley. We failed to confirm this, but there is a possible tholos ca. 150 m. to the S-E of the excavated one and 40 m. south of the rail line. One of Valmin's former workmen asserts that this is the site of the second tomb.

The excavated tholos has a small side chamber. The earliest pottery is of late palace style (1450-1400) which is said to be extremely close in every detail to that from the Kakovatos tholoi (#20). A "hero cult" continued at the tomb until C or H.

This tomb was probably built close to the ancient road which must have run past Malthi-Dorion and on to the Stenyklaros plain. In this whole area the present railroad line would seem to have followed closely a route of great antiquity.

Note: Valmin's fig. 5 is as confusing here as in connection with #23. The excavated tholos and railroad line appear in proper relationship, but the highway and unexcavated tholos are shown south of the railroad. Actually, the highway is at least 500 m. north of the railroad.

29. Ayios Taxiarchos (Polichni)

Ad. Gebiet 92, 93, 97.

Ca. $3\frac{1}{2}$ km. east of Malthi on the west edge of the Stenyklaros plain. The hill overlooks the village of

Polichni and the classical site at Divari (Valmin's candidate for Andania). Bearings to Polichni church, 230°; to center of Diavolitsi, 30°.

A bare, rounded hill ca. 120 m. high (not unlike Malthi in position), crowned by the ruins of the mediaeval convent of Ayios Taxiarchos. The flattish area on top is ca. 250 m. S-SE x N-NW by 100 m. It is joined by a broad saddle to Chalikaki hill of similar height on the west side.

Coarse sherds are fairly abundant on the top and upper slopes. A few of pinkish soft fabric may be Mycenaean. One frg. is definitely the base of a MH-LH I goblet. Cf. Mycenaean sherds from deep bowls with dull black monochrome paint on soft buff fabric in the Kalamata museum and labelled "Πολυχρη." Also in the Kalamata museum is a Mycenaean steatite button said to be from Konstantini, slightly north of Polichni.

This site dominates the route connecting the Soulima and Stenyklaros valleys.

30. Chasna (Mandhra)

A collapsed tholos tomb in the hamlet of Mandhra which is ca. 1 km. N-NE of Elektra village. The whole area was formerly called Gliata. There are two springs in the larger village.

The tomb is located ca. 20 m. S-W of the church of Ayios Georgios. The circle of stones is clear, as is also the line of the dromos which faces 85°. The diameter is ca. 13 m. and the length of the dromos 11 m. A large well was built nearby with stones from the tomb, but there was apparently no attempt to penetrate very deeply.

This is probably one of the two "Kuppelgrabe bei Gliata" which Karo (*RE Suppl.* VI, 607) lists as a notification by letter from Valmin. Villagers say ancient walls were discovered when digging foundations for a house ca. 20 m. north of the spring called Krounovrisi in Elektra village. Quite possibly there was a habitation site in this area.

31. Krebeni (Kato Melpia)

A large habitation site ca. 300 m. north of and above the village of Kato Melpia. To the west and slightly lower is a copious spring called Koubes.

The site extends ca. 600 m. E-W by 300 m. N-S on steep terraces overlooking the N-W end of the fertile upper Messenian plain (cf. Philippson 400-02). It had fine natural defences with the steep crag called Kastro (crowned by a Venetian fort) rising precipitously to the north, the deep Langadha gorge to the west, and a sharp drop-off also to the east and south. The chapel of Ayios Demetrios stands near the east edge. In several spots there can be seen above the surface remains of well built C or H terrace walls, stairways, and door jams.

The plentiful surface sherds include Mycenaean (early LH III B and probably LH III A) of good quality, concentrated mostly in the central part of the site. Some sherds are apparently A, and there are many of the C and H periods, including two loomweights.

This must have been an important town in the Late Bronze Age and especially in C times. It will require serious consideration in any future discussion of the topography of the upper Messenian plain.

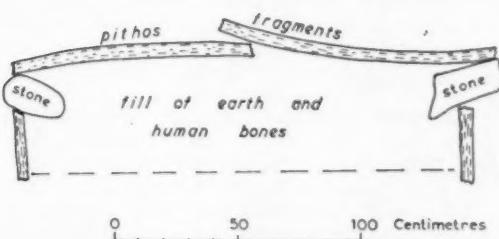
32. Karatsadhes (Loutro). Ill. 6

Ad. Gebiet 39; RE Suppl. VI, 607.

Loutro is a hamlet 1 km. north of the village of Oichalia. The site is ca. 500 m. E-SE of Loutro, in an olive grove with stony reddish alluvial soil. The Xerias river is immediately to the south. This is a very tricky spot to locate without a reliable local guide.

Perhaps there was originally a low mound, ca. 200 m. by 200 m., to judge by spread of pottery. The diversion

KARATSADHES (LOUTRO). SECTION OF TOMB



ILL. 6. Karatsadhes(Loutro)(#32). Section of tomb

of a minor stream in 1947 exposed graves. This stream bed has now (1960) been almost completely levelled out.

Frgs. of large pithoi of reddish "oatmeal" ware and other coarse fabrics (EH? or MH?); cist graves covered with slabs. A grave covered with large pithos fragments and lined with stones (ill. 6) resembles a burial at Olympia (*Alt-Olympia I*, 94-95). Rims from large bowls (EH? and MH?) with reddish, gritty fabric decorated with zigzags, S's, raised ridges, finger impression bands. Valmin reported "Adriatic ware" mixed with EH.

This was probably a small EH-MH site. Its continuation in LH is uncertain. There is a good spring at a spot called Palaio Loutro (or Evangelistra) ca. 15 min. distant on the road toward Zeugolatio.

33. Kokkala

Ad. Gebiet 42, Abb. 3; Études 74-78; Philippson 368, 369.

A hill ca. 5 km. east of Loutro (#32) on the southern slope (ca. 720 a.s.l.) of Mt. Ellenitsa, close to the ancient border of the southern Arkadian salient.

Valmin refers to "prehistoric" walls, "fragments of vases which seem to be geometric," "bits of obsidian," as well as to "hand-made vases" and "neolithic celts."

Strategically situated to control land traffic in and out of eastern Messenia, this is a leading candidate for ancient Ampeia.

Note: We did not visit this site.

34. Koutsouveri (Margeli)

Ca. 1 km. N-W of the modern town of Margeli, which is on the S-E edge of a fertile little valley in the rugged south central interior, approximately in line with and equidistant from Messene-Ithome and Volimidia-Chora (#41).

A rounded hill ca. 40 m. above the plain, which it overlooks toward the N-W. It has fairly easy slopes, steepest toward the N-W, and very gradual to the S-E. The upper area, ca. 200 m. by 200 m., is rocky and uneven, especially toward the outer edges. Much of the area is now cultivated at the cost of tremendous labor in confining the stones to numerous piles (armakadhia) and fences. Thin slabs of stone standing on edge and in line give the impression of streets, corridors and rooms, but these formations probably have a natural origin. Broken pottery is strewn thickly all over the hilltop.

Nearly all of the sherds seem to belong to MH times or at least to that tradition. The more representative (cf. pl. 78,c) include: frgs. of pithoi in reddish gritty fabric (#4, 6); handles of jars in reddish poorly levigated fabric (#11, 12); high-swung handles (imitation Minyan) in hard buff or reddish fabric (#15); bases of goblets in imitation Minyan (#16); much coarse ware (#20). One class of softer buff wares might be LH, but hardly "Mycenaean" in the strict sense.

This interesting site would appear to be an isolated local agricultural center little affected by Mycenaean culture.

35. Castro (Chalvatsou)

A bare conical hill immediately to the east of the road from Aristomenis at a point ca. 3 km. south of Chalvatsou village. Bearings to Chalvatsou village center, 355°; to Ayios Vasilios chapel near Voutaina, 236°.

On the summit are remains of a mediaeval village. On the middle and lower west and S-W terraces pottery of the Bronze Age (and mediaeval as well) occurs for an extent of ca. 300 m. N-S by 150 m. E-W. A small spring called Ayiou Stephanou is located on the lower west slope, and a big spring called Kephalovrisi issues just below the south edge of Chalvatsou village. A river called Vartigou flows toward the south in the fairly fertile valley.

The pottery includes handles of coarse Bronze Age (late?) jars and goblets. The general impression is very similar to #34. Two sherds from handles of softer fabric may be imitation Mycenaean.

This was apparently a local farming community. The site was apparently chosen for its isolation, as was certainly the case with its mediaeval successor.

36. Kouphieros (Pedhemenu)

A large cave in the N-W slope of a ravine at a point ca. 1 km. N-E of the village of Pedhemenu (now officially Phlesias). The village of Palaio Loutro faces the cave on the opposite (S-E) slope.

The interior of the cave contains a popular modern chapel and the floor is packed hard. But on the slope

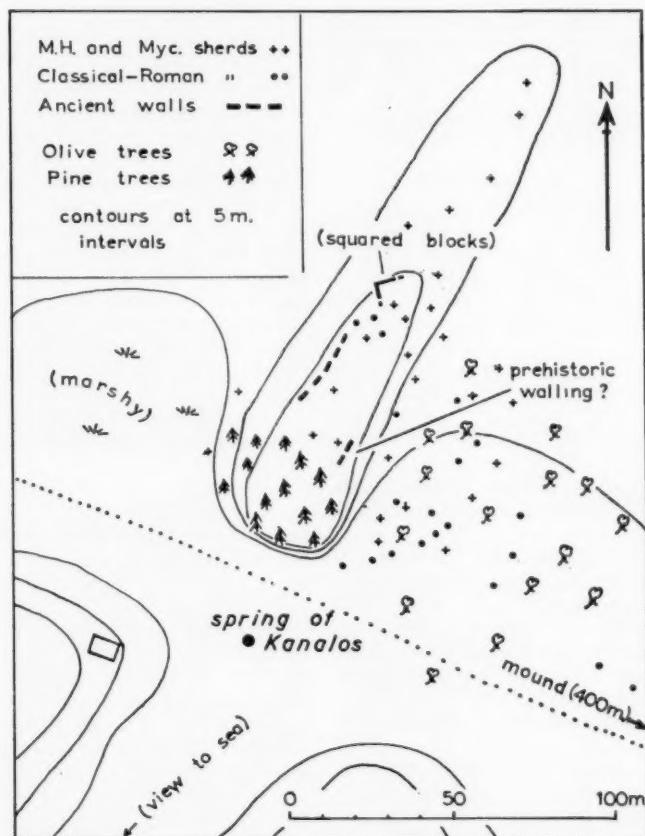
below the entrance we picked up numerous fragments of N pottery.

37. *Ordhines* (Langouvardhos)

On the Filiatra-Gargaliani highway at a point ca. 3 km. north of Gargaliani is the bridge over the Potamitou Langouvardhou, and ca. 200 m. toward Gargaliani from the bridge is a spring called Kryoneri gushing from a rock above and on the south of the highway.

km. distant) which is partly sheltered from the S-W. The land is owned by Stavros Petropoulos of Gargaliani.

Sherds are sparsely scattered over the eroded and mainly uncultivated surface. Our finds include: EH base of sauce-boat; MH (?) base of flat loop handle of high-swung goblet in soft buff fabric. From LH III are two bases of kylikes, one hollowed in center; a fragment from a low-stemmed bowl; numerous fragments



ILL. 7. Kanalos (#38)

One ascends the ridge at this point and follows the edge of the south bank of the Langouvardhos ravine ca. 600 m. to the west. Bearings to Marathoupolis church, 200°; to chapel near Gargaliani, 129°; to northern tip of Prote island, 229°.

The flat rocky summit measures ca. 200 m. N-S by 100 m. E-W (maximum dimensions) and is ca. 50 m. a.s.l. Lower slopes extend ca. 250 m. to the N-W where there is a sharp declivity. To the south and east the hill is not very sharply delimited. The site overlooks a coastal plain with a small sandy beach (ca. 1

of pithoi and other coarse ware shapes, including the familiar oatmeal fabric.

The pottery from this and site #38 gives the impression that they are peripheral. Their agricultural potential is limited by the less productive type of soil both along the coast and on the plateau to the east.

38. *Kanalos* (Gargaliani). Ill. 7

The site is ca. 2½ km. W-SW of the large town of Gargaliani, 1½ km. from the sea (to the west), 1½ km. south of the Gargaliani-Marathoupolis road, and

$\frac{1}{2}$ km. west of Kanalos hamlet. Immediately to the south is the small spring of Kanalos, with Turkish brickwork surrounding it. Ca. 400 m. to the S-E is the locally well-known "Toumpos tou Kanalou." Compass bearings from site to Gargaliani, 70° .

The habitation site is on the S-W end of a small spur (one of a series jutting S-W into the lower Gargaliani plain) and on its S-E slopes. The slopes are planted in olives; the upper area has a pine grove at the S-W and the remainder in scrub or rough grain fields. The top of the spur is ca. 15 m. above the spring and 30 m. a.s.l. The extent of the site is ca. 170 m. N-E-SW by 110 m. NW-SE. The soil is a rather sandy loose marl, quite different from the terra rossa (locally called "retsinia") of the Gargaliani plain. The view to the south and west is now obscured by trees, but the position is high enough to command the whole extremely level plain. There are possible prehistoric fortifications above the S-E slope, and several good squared, hammer-dressed poros blocks in line on the N-E side (late C-H temple?). The mound to the S-E is ca. 9 m. in diameter and 4 m. high. It has a capping of reddish earth ca. 1.50 m. thick, and some large stones are apparent on the south side.

The sherds we gathered include: from MH, frgs. from flat loop handles of large carinated bowls (pl. 78,c, #9; ill. 8,J) in grey-brown polished fabric, similar to examples from the Argive Heraeum; bases of goblets in imitation Minyan ware (pl. 78,c, #17, #18), with well levigated fabric, sometimes grey or reddish; flat bases of coarse jars, probably MH. To LH III A-B belong frgs. of kylixes and stemmed bowls of soft buff fabric, mainly monochrome painted; also several frgs. of obsidian, and several bits of low-stemmed bowls (LH I-II?). There are a fair number of C-H sherds and tiles, especially in the N-E area. The mound to the S-E may be a MH construction (cf. #43, #50).

This and site #37 help somewhat to fill the gap in the pattern of known prehistoric coastal occupation between the Pylos and Kyparissia-Malthe complexes.

39. *Tsouka* (Pyrgaki)

A burial tumulus situated in a vineyard on the crown of a ridge descending toward the sea in a S-SW direction from the Aigaleon range which parallels the coast. On roughly parallel ridges to the E-SE, separated by deep ravines, are the Kaldamou mounds (#43) and the palace site at Ano Englianios. The tumulus in question is ca. $1\frac{1}{2}$ km. south of the nearest point in the highway between Phloka and Pyrgaki, but is most easily reached from the latter village (ca. 2 km. W-SW of it). Compass bearings from the site to church of Ayios Demetrios, Phloka (ca. 2 km.), 345° ; to church of Ayios Spiridon in Gargaliani (ca. 4 km.), 278° ; to Levki church, 208° .

The mound is being gradually ploughed down, but is still ca. 12 m. E-W by 9 m. N-S and 5 m. high. Bones, frgs. of pithoi and white stone cover slabs protrude from the nearly vertical sides. On the same ridge and in the same vineyard there is another similar mound,

smaller and lower, ca. 200 m. distant, and at 52° compass bearing from the first.

MH finds comprise: flat base of large goblet in greyish fabric (imitation Minyan); part of matt-painted high-swung handle of goblet. A class of late wheel-made pottery is probably R (or Byzantine).

No habitation site has been associated with these burial mounds as yet. They may be connected with several similar and apparently contemporary mounds at Kaldamou (#43).

40. *Lagou* (Ambelofito)

The site is ca. 100 m. east of the highway between Pyrgaki and Ambelofito (formerly Agorelitsa), ca. $1\frac{1}{2}$ km. from the former and $\frac{1}{2}$ km. from the latter. It lies on a small spur extending south from the NE-SW plateau, and with a fine view over the rolling and fertile Chora area to the S-E. Compass bearings to Ambelofito, 185° ; to church of Ayios Demetrios just N-W of Chora village, 129° . There is a good spring not far to the east.

A flat site with a total area of ca. 100 m. by 100 m. The owner is Georgios Apostopoulos, of Pyrgaki. In the cut on the east side of the highway opposite the site we saw some skull and teeth bones, together with Mycenaean monochrome sherds.

The site is almost denuded of sherds because of intensive vine culture. In numerous stone heaps there are frgs. of LH III B undecorated kylixes.

Probably a small unfortified agricultural center in late Mycenaean times.

Cf. Appendix (d).

41. *Volimidhia* (Chora)

Praktika (1952) 473-96; (1953) 238-50; (1954) 299-308; *JHS* 73 (1953) 118-19; 74 (1954) 155; *BCH* 77 (1953) 214-16, fig. 20; 78 (1954) 120-24 (*re* habitation site); 79 (1955) 247-49; *Ergon* (1954) 41-43; *Das Altertum* I:3 (1955) 140-63.

Marinatos' excavations of this extensive cemetery are well known. There are interesting architectural variations in the chamber tombs cut in the fine textured marl on the slope above (N-NE of) Chora village. The contents date from LH I to LH III B, with a funerary cult apparently continuing into H and R times.

Marinatos has also explored several chamber tombs belonging to a second, later Mycenaean cemetery situated ca. 3 km. to the S-W on the opposite side of Chora village in an area called Ayios Elias. These cemeteries surely presuppose an important habitation site in the vicinity, and this is all the more certain because of the magnificent springs at Kephalonvrisi some 400 m. N-E of the Volimidhia cemetery. The traces of a settlement reported by Marinatos just south of the main cemetery are unimpressive, but may be all that has been left by long and intensive cultivation in this fertile area.

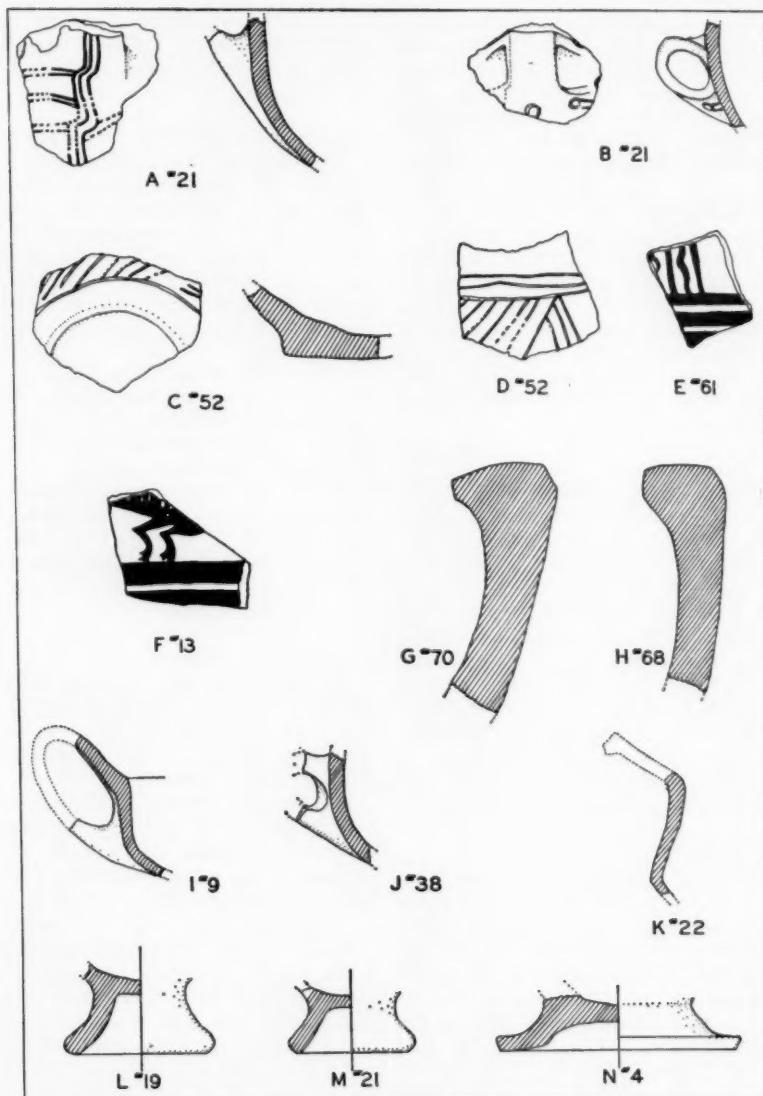
42. *Ano Englianios* (Palace of Nestor)

Detailed preliminary accounts of each season's work have appeared regularly in *AIA* (cf. *AIA* 64 [1960]

153, n. 1) and sporadically in many other publications.

A decade of excavation has gradually revealed a great palace complex on a fortified citadel, an extensive lower town, and outlying tombs of both tholos and chamber

the early Iron Age. Blegen is now beginning to suggest the basis for a synthesis between the archaeological remains and later historical-mythological-literary data in connection with Pylos (cf. *op.cit.* pp. 159, 160). For the



ILL. 8. Representative patterns and profiles

type (cf. #42A). The acropolis and lower town were continuously inhabited from late in MH to the very end of LH III B. There seem to have been at least a few people living somewhere in the immediate area, though not on the acropolis, in LH III C and on into

continuing controversy over the identification of the palace, cf. Section III.

42A. *Chourou* (Pisaski)

A hill called Tou Chourou to Chani is located ca.

500 m. north of Pisaski village (which is ca. 1½ km. north of Koryphasion village) and ca. 400 m. east of the Koryphasion-Chora highway. Bearings to Ayios Georgios church, Pisaski, 199°; to Ayia Triadha church, Romanou, 229°; to Ayios Georgios church, Tragana, 257°.

This is a well-defined hilltop ca. 50 m. E-W by 20 m. N-S. A little spring issues in the valley to the S-W.

The hilltop is strewn with pottery and tiles from late building(s), probably a Turkish *khani* (inn). We found no certain earlier sherds but worked flint was picked up and a reliable report by Demetrios Apostopoulos of Koryphasion describes previous finds including fragments of stirrup vases.

It is probable that two tholos tombs were located here in an E-W line.

Note: The same informant reports evidence of tombs not far east of the Koryphasion-Chora highway at a point ca. 2 km. beyond Koryphasion. This is only ca. 300 m. N-W of the Chourou site and very near LH and P-G tombs excavated by Lord William Taylour in 1958-59 (cf. *AJA* 63 [1959] 127). It would appear that there is a very large and rather scattered necropolis in the whole Kato Englianios area. One naturally connects all of these tombs with the palace site (#42), and burials of LH III C and P-G times prove that a certain amount of habitation continued in the area after the palace itself was destroyed. Here too we should mention "ruins of two successive circular or apsidal houses, apparently EH" (*AJA* 63 [1959] 126, 127) located ca. 80 m. east of the highway at a point ca. 500 m. south of the palace site.

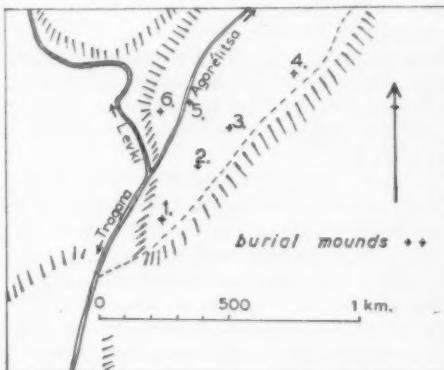
43. *Kaldamou (Levki)*. Ill. 9; pl. 78,a

Six large mounds on or near the crest of the high ridge stretching from the Ambelofito area down toward the sea at Tragana. All are east of the newly-improved Tragana-Gargaliani highway, with the most distant ca. 700 m. to the east. They are grouped in fine vineyards on either side of the track leading to Ambelofito. From the center of the group the town of Levki is approx. 1¼ km. to the N-W and Tragana 2½ km. S-SW.

The mounds are located as indicated in ill. 9. All are being rapidly eroded by cultivation. Present approximate dimensions (length, width, preserved height) and compass bearings to the reconstructed tholos on the Ano Englianios site and to Levki are as follows: Mound 1—16 m. by 13 m. by 5 m., 117°, 31°; Mound 2—almost totally destroyed by an aloni (drying area for grapes), 137°, 292°; Mound 3—13 m. by 13 m. by 3 m., 112° (to tholos); Mound 4—10 m. by 8 m. by 2 m., 142°, 277°; Mound 5—13 m. by 10 m. by 5 m., 130°, 287°; Mound 6—25 m. by 15 m. by 5 m. In all except #5 large flat cover slabs of stone are *in situ* and nearby. Some of the slabs used in the largest (#6) are over 1 m. long. In all but #3 and #4, pithoi or fragments of pithoi can be seen *in situ* and scattered in the vicinity. In some cases fragments seem to have been used as cover slabs; in others whole pithoi were laid on their sides. Again, the pithoi in #6 are especially large.

There are few surface sherds except fragments of coarse pithoi. Some of these are typical MH "oatmeal" ware (cf. detail of rim sections, ill. 8,G,H).

These were all multiple burials like those at #50. There were undoubtedly more mounds along the same ridge (cf. #44). Perhaps a more painstaking search among the vineyards at the most favorable time of year



ILL. 9. Kaldamou (Levki) (#43)

would reveal additional examples not yet completely ploughed down. As for an associated habitation site, Ano Englianios itself is a possibility. The neighboring site (#45) must also be considered.

44. *Kapoureika-Diakoupia*

A burial mound was destroyed in road building operations in the peripheria of Kato Diakoupia which is ca. 1½ km. north of Tragana village and slightly south of the peripheria of Kapoureika which adjoins Kaldamou (#43). Bearing to Ano Englianios, 115°.

A large pile of stone beside the road in the property of Panaghiotes Stoupas of Levki village is said to have come from a construction destroyed by a bulldozer. A pithos was revealed in the west bank of the road and a rim fragment still visible is exactly similar to those described under #43.

This tomb and other possible mounds in this immediate area seem to line up N-S with the better preserved examples from further north (#43). Apparently this ridge was the site of a very large MH (and early Mycenaean?) cemetery.

45. *Voroulia (Tragana)*

Ergon (1956) 90.

Approx. 500 m. north of Tragana village, immediately below (east of) the road to Gargaliani. Bearings to Palaiokastro, 192°; to Ayios Charalambos church, Koryphasion, 128°; to Ano Englianios, 50°.

Marinatos' excavation in the very steep east slope revealed foundations of "a small room of a destroyed house" containing a large pottery deposit.

The excavator mentions painted pottery, including material from the very beginning of LH, and contem-

porary with them (*συγχρόνος*) a few dark-colored MH vases. Our own sherds gathered in the excavation area include: broad rim in imitation grey Minyan ware (MH); some coarse ware of soft fabric (LH I?); rim of kylix (LH II or III).

It seems unlikely that a sizable habitation site would have been built on this steep slope. There are no sherds evident on top of the ridge.

46. *Tragana*

Praktika (1909) 274, 292; *Archaiologike Ephemeris* (1912) 268; *Ergon* (1955) 88-91, figs. 87-89; *BCH* 80 (1956) 285; 81 (1957) 558-59; *JHS* 76 (1956) Suppl. 16; 77 (1957) Suppl. 15; Desborough, *Proto-Geometric Pottery* 281-83.

Two tholoi lie ca. 20 m. apart at the S-SW end of the ridge on which stands Tragana village (ca. 1 km. further N-NE). One gets a fine view over the whole Pylos area. Bearings from south tomb to church at Tragana, 29°; to bell tower in Koryphasion, 90°; to Romanou church, 164°; to Palaiokastro, 186°.

Marinatos, who re-examined one tomb originally dug by Kourouniotes and who excavated the second, dates the original construction and contents of both to ca. 1400. The Kourouniotes tomb had burials as late as P-G and was re-used as a dwelling in H times.

No habitation site has yet been convincingly associated with these important tombs. The palace site at Ano Englianios and #55 and #56 seem rather remote, but the remains of habitation so far discovered in the immediate Tragana vicinity are not very impressive.

47. *Koukouyera* (Tsitsiras). Pl. 78,b

A large artificial mound on the crest of the high ridge stretching down toward the sea between Chora and Myrsinochori. The area is called Tsitsiras, the hill itself Tou Koukouyera, and the present owner is Constantinos Stephanopoulos. The site lies ca. 500 m. above (west of) the Chora-Myrsinochori road which one leaves at a point ca. 500 m. north (on the Chora side) of the bridge across a deep ravine. This gorge, which is called variously Sophadhes or (To) Pispisaiko (potámi) or Tou Skarminga, is the boundary between the modern eparchies of Triphylia and Pylia. Valmin (*Études* 145) may well be right in equating it with the Selas river of antiquity. Compass bearings from top of mound to reconstructed tholos on Englianios site, 260°; to Myrsinochori, 142°; to Ambelofito, 314°.

A very regular mound ca. 27 m. N-S, 21 m. E-W, and 7 m. high. It is now planted in grain to the very top, where there is a concrete survey post. The hill affords a magnificent unobstructed view in every direction, especially toward the Bay of Navarino.

No surface pottery is apparent.

There is every reason to believe this is the site of an important tholos tomb, possibly not collapsed.

Note: Another apparently artificial mound can be seen on the same ridge at a spot called Vlacherina, ca. 600 m. distant at 315° compass bearing.

48. *Routsi* [or Routsia] (Myrsinochori)

Praktika (1953) 249; *Ergon* (1956) 91-96; (1957) 70-75; *JHS* 77 (1957) Suppl. 14; 78 (1958) Suppl. 11; *BCH* 81 (1957) 558-65; 82 (1958) 722-23; *ILN* (1957) 540ff; *Antiquity* (1957) 97ff.

A fine fertile upland plateau to the south of the Pispisaiko gorge and ca. 1 km. N-E of Myrsinochori (formerly Pispisa) village. Two tholos tombs were excavated here by Marinatos. One was refilled; the second is open and partially restored. Outside dates assigned to the rich contents are LH II A to LH III A:1 (1500-1420).

There are at least three other mounds (which Marinatos calls "tombs" but not "tholoi") in the same general area:

1. Ca. 150 m. S-W of the excavated tholoi and slightly west of the route to Myrsinochori, in a field owned by Theodoros Giannokopoulos. The mound is on top of the ridge and less than 1 km. N-E of Myrsinochori.
2. A stony mound ca. 12 m. by 10 m. by 4 m. high in the same peripheria (Routsi) and near the west tip of the ridge overlooking the Pispisaiko gorge. Just west of the mound is a summer kalivi (cottage). Compass bearings from mound to excavated tholoi (ca. 500 m. distant), 91°; to center of Myrsinochori (ca. 700 m. distant), 215°; to Ambelofito, 316°.
3. A mound ca. half-way (i.e. 500 m.) along the (downhill) road between Routsi and Myrsinochori and 20 m. S-W of the road in the property of Christos Georgopoulos of Myrsinochori. Dimensions are ca. 13 m. by 13 m. by 5 m. high. A trench 3 m. wide has been cut through what seems to be a clay capping.

No habitation site has as yet been identified in the immediate vicinity of the tholoi. We examined several possibilities with little success. The only site worth recording is called Panagia or Panagitsa, the modern cemetery and chapel just N-W of Myrsinochori village, at the west edge of the ridge. The surface pottery here includes a few pieces that could be prehistoric.

49. *Papoulia*

Praktika (1954) 311-16; *Ergon* (1954) 42-43; (1955) 91; *JHS* 75 (1955) Suppl. 11 and fig. 7; 76 (1956) Suppl. 16; *BCH* 79 (1955) 248-49; 80 (1956) 286.

Four rather small tholos tombs were excavated here by Marinatos. Three are in the village and badly destroyed. One is just outside the village at a spot called Latzouni, and the collapsed chamber is said to have been intact. The pottery is LH III. Marinatos also reports "traces of a settlement below the modern village."

50. *Ayios Ioannis* (Papoulia)

Cf. the bibliography for #49, especially *Ergon* (1954) fig. 55.

A large tumulus 50 m. north of the Platanos-Papoulia road, ca. 1½ km. from the former and 1 km. from the latter village. The custom documented here of

multiple burials in pithoi under stone slabs finds parallels in many Messenian mounds (cf. #39, 43, 44 etc.). Marinatos says "all tombs of this type belong to the transition EH to MH, or ca. 2000 B.C." He reports at least twelve similar mounds "within a relatively short distance" and at least double that number in the whole of western Messenia. Even a rough published sketch of these locations would be of great service in elucidating the habitation pattern of the earlier prehistoric period (cf. footnote 12 infra).

51. *Kretharetses* (Platanos)

Two mounds, perhaps roughly contemporary with #50, are visible not far south of the road between Platanos village and its junction with the Iklaina road.

1. Ca. 700 m. west of Platanos and 15 m. south of the road. Ca. 12 m. in diameter and 3 m. high. Human bones can be seen along with early looking coarse pottery. One sherd could be LH coarse ware.
2. Ca. 500 m. west of (1) and 10 m. south of the road (which jogs around it). The immediate area is called Ali Chodza; the owner is Pavlos Stavropoulos of Iklaina. Compass bearing to Palaiokastro (Navarino), 224°. Ca. 22 m. in diameter and 4 m. high. Large stone slabs and frgs. of pithoi are visible in its sides. The pottery is like that in (1). We also found bases of jars in soft pink fabric, possibly LH III.

52. *Traganes* (Iklaina)

Ergon (1954) 42; *Praktika* (1954) 308-11; *JHS* 75 (1955) Suppl. 11; *BCH* 79 (1955) 248.

The site lies ca. 1½ km. west of Iklaina village, on the western tip and upper western slopes of a broad spur overhanging a deep ravine to west and S-W. Fine view to the north end of Bay of Navarino and beyond. Compass bearings to Iklaina church, 99°; to Sgrapa village, 172°; to Koryphasion village (ca. 3 km.), 278°.

The occupation area is ca. 200 m. N-S by 150 m. E-W. A good spring called Perdikovrisi is located just below the western edge. The area is now cultivated in vines (upper) and grain (slopes), and there are no signs of Marinatos' trenches, although he reports remains of heavy double walls, pebbled floors, and fragments of frescoes. Ca. 200 m. to the east on slightly higher ground, in an area called Agria Anginara, there are visible the foundations of a large building (seen by McDonald in 1953) with big well cut blocks protruding above the surface. This may be Marinatos' "remains of a rectangular building of large stones." There are few surface sherds here. Ca. five minutes further to the N-E in an area called Palaiolevadha there is a large site (Byzantine or later) with possible church ruins.

The Traganes site is thickly strewn with surface pottery of the MH and LH periods. In general the MH sherds are concentrated on the western slopes. They include: imitation Minyan ware (pl. 78,c, #14), good fabric, from large bowl with high-slung handles;

coarse ware probably imitating Minyan; incised ware (pl. 78,c, #7, #19; ill. 8,C; cf. ill. 8,D and *Asea*, fig. 105); soft reddish fabric, from large jars (pl. 78,c, #10, #13); coarse ware (pl. 78,c, #1, #2, #5) of poorly levigated gritty fabric, from pithoi. To LH II or III: frgs. of low-stemmed bowls with hollowed base, of softish clay. To LH III: frgs. of long-stemmed kylixes, usually of soft buff fabric, sometimes shading into yellow and red. Probably LH III is the forepart of an animal figure (head missing) of soft yellowish clay. We found no ceramic evidence for prehistoric occupation in the areas to the east called Agria Anginara and Palaiolevadha. The Traganes site is large and situated in a fertile upland. The pottery yields the general impression of a provincial agricultural town. This could be the find-spot of a stone "axe" reported by Skias, *Praktika* (1909) 284, as having been found "near Iklaina."

53. *Gouvitises* (Iklaina)

About 1½ km. N-W of site #52 and 3 km. N-W of Iklaina. The owner of the land is Georgios Kanavos of Iklaina. Fine view toward the north end of the Bay of Navarino. Bearings to village of Romanou, 256°; to Palaiokastro, 224°; to Iklaina, 110°.

An eroded and rather barren area, sloping down fairly steeply toward a ravine to the south and west.

There are some scattered and perhaps "foreign" stones from wall foundations. Sherds are sparse and nondescript. One monochrome red bit is probably Mycenaean. Local residents recall the discovery of a grave (?) about 1912 in which were "seals" and a small piece of gold. They also describe vases of kylix shape.

If this was a site at all, it was probably of minor importance.

Note: We had a report by two reliable informants of two collapsed tholoi (lintel of one visible) at a spot called Klarakia on the north slope of Xerolanghades stream ca. 3 km. N-W of Iklaina and 2 km. S-E of Koryphasion. They might be connected with the Gouvitises site.

54. *Panayia* (Iklaina)

At the eastern end of a low spur rising ca. 10 m. above its surroundings and ca. 1¼ km. N-E of Iklaina village. A chapel of the Panayia occupies the east end. Compass bearings to Iklaina church, 280°; to Platanos church, 357°.

The hilltop is ca. 200 m. E-W by 70 m. N-S, oval in shape, with gentle slopes. The top is sandy and barren, with some scrub. The lack of cultivation may be connected with the sparseness of surface sherds which were found in the center and west only. Nikolaos and Ioannis Stathopoulos of Iklaina, owners of the vineyard on the N-W slope, report many large blocks under the surface. A very large slab of stone now lies ca. 30 m. north of the hilltop. They say their father found "gold nails" and "plates with pictured animals" under or near it.

MH (?) coarse ware: handles of jars (pl. 78,c, #11, #13) in red fabric. LH III: frgs. of long-stemmed kylixes in soft buff fabric.

This was probably a rather small habitation site. There may be a (LH?) cemetery on the west slope.

55. Portes (Koryphasion)

AIA 43 (1939) 559.

A low mound at the S-W foot of the ridge on which modern Koryphasion village (formerly Osmanaga) is built. The mound is cut through by the Pylos-Chora highway at a point ca. 400 m. south of the junction of the road to Koryphasion and Iklaina.

The mound is now ca. 2-3 m. above its surroundings but seems to have been severely ploughed down. Present dimensions are ca. 120 m. E-W by 80 m. N-S. There are practically no surface sherds to the west of the highway, but they are fairly numerous in the east bank of the road and in the olive grove beyond. In this area the owner says many heavy blocks have been removed and others remain below the surface.

Some coarse ware of reddish fabric might be MH (or early Mycenaean), but nothing is certainly pre-Mycenaean. LH material includes: frgs. of low-stemmed bowls, mostly of soft fabric; sherds with monochrome paint; frgs. of long-stemmed kylixes and deep bowls. We saw a few C and H black-glazed sherds. The site has an extraordinary number of artifacts in obsidian, stone, flint (one in agate?); large hammer in red stone, bored for handle; pounders, rubbers, etc.; generally rough condition (unfinished).

This small exposed site perhaps specialized in manufacturing stone artifacts.

56. Beyler Bey (Koryphasion)

AIA 43 (1939) 559.

The site is on the northern extension of a long ridge rising ca. 20 m. from the plain, about 1½ km. south of Koryphasion village. Compass bearings to church of Ayios Charalambos in Koryphasion, 358°; to church of Ayia Triadha in Romanou (ca. 2 km.), 279°.

The acropolis has a level cultivated top ca. 200 m. N-S by 150 m. E-W, with good whitish sandy marl soil. There are fairly steep slopes to the north and east, and gentle terraces to the west. At the south a saddle occurs between the site and a slightly higher and broader part of the ridge which has reddish soil. Some "tombs" are reported here. This is supported by Skias' report, *Praktika* (1909) 289, that a certain G. Poulopoulos of Osmanaga (Koryphasion) had in his possession "a bronze sword and other things coming from an area called Beyler Bey." There are plentiful surface sherds on the main site. Cultivation of the east slopes has uncovered walls (of houses?) and probably graves. A good spring called Vrisoules lies ca. 50 m. further east.

The pottery is mainly LH III B, although some is possibly LH II and III A. Frgs. of deep bowls and kylixes, not of very good quality, with streaky paint and soft fabric. Frgs. from handles and necks of jugs and jars of coarse ware.

This is a large site in a position to control a good part of the fertile coastal plain. From the date of the

surface pottery it does not appear to have been associated with the tholos nearby (#57).

57. Charatsari (Koryphasion)

Praktika (1925/26) 140-41; *AIA* (1926/27) 8; *IHS* (1926/27); *AIA* 43 (1939) 557; *Hesperia* 23 (1954) 158-62, pl. 37-38; *Antiquity* 34 (1960) 169-70, 176.

The site is overgrown and elusive. The original floor of the tomb chamber must have been far below the ground level and no mound is visible now. The tomb lies ca. 1 km. S-SW of Koryphasion village and 1 km. N-W of #56 (from which compass bearing 303°).

The chamber is ca. 6 m. in diameter and the same in height. The unlined dromos must have descended steeply. Blegen's recent study and publication of the important ceramic contents found a generation ago by Kourouniotes proves that some of the pottery must be classed as late MH. It appears to follow that this is the earliest known mainland tomb of tholos type (in Messenia at any rate) and that "the inhabitants of continental Greece before the end of the Middle Bronze Age were already familiar with the construction of underground tholoi."

58. Palaiochori (Gialova)

An imposing acropolis above and east of the village of Gialova, at the western extremity of the ridge called Dapia which separates the two small fertile valleys of Pilokambos (on the south) and that formed by the Giannousaka river (on the north). Bearings to Palaiokastro, 275°; to Kastro at modern Pylos, 197°.

The summit is ca. 80 m. a.s.l. The intensively occupied area included also the upper terraces with a total extent of ca. 150 m. N-S by 120 m. E-W. Sparser sherds occur on the lower west terraces for an additional area of ca. 250 m. E-W by 300 m. N-S. There are possible tholoi ca. 500 m. eastward along the ridge in an area called Charalambaki and on a parallel ridge to the north called Karmidhi. Local reports mention "tiles" and a gold ring.

Sherds from the Palaiochori site include LH III B plain kylix feet, jug spouts, and painted fragments from deep bowls and kylixes.

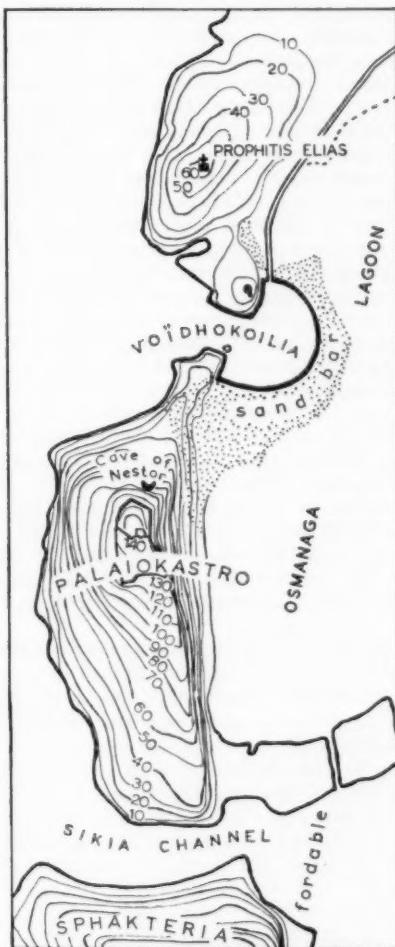
This was undoubtedly a very important habitation site with fertile plains on either side and a fine water supply in the Giannousaka river and associated springs. Situated at the end of Osmanaga lagoon, it commanded an excellent view to the north, south and west.

59. Prophitis Elias (Voidhokoilia). Ill. 10

The site occupies the central part (saddle) of the ridge that encloses Osmanaga lagoon on the N-W. To the N-NE rises a steep rocky hill crowned by the chapel of Prophitis Elias, and to the S-SW is the point (#60) just above (north of) the entrance to Voidhokoilia bay.

The site occupies a level, bare and sandy area ca. 100 m. E-W by 60 m. N-S. There is evidence of occupation extending from the cliffs immediately above the sea at the west to the sharp drop (now obscured by sand dunes) down to the lagoon at the east. Habitation

may have extended even further south into a rocky area now much overgrown. There is also a possible EH cemetery on the lower fairly level east shoulder of Prophitis Elias, ca. $\frac{1}{2}$ km. N-E of the habitation site and directly above the lagoon.



ILL. 10. Vöidhokoilia area (#59-62)

The whole area is strewn with sherds and worked fragments of obsidian, chert and bone. Numerous wall foundations (of houses?) are noticeable. Some very finely polished ware might be N; high base of EH sauce-boat with "Urfirnis" paint. Probably EH is a class of thin, smoothed and polished coarse ware (one handle closely resembles an EH sherd from Elaphonisi in Lakonia). The base of a tiny goblet is probably MH.

This was a site of considerable importance in EH and was probably occupied also in N and MH. The N phase might well be connected with the so-called cave of Nestor nearby (#62).

60. *Vöidhokoilia* (ancient Bouphras). Ill. 10

Ergon (1956) 90-93; *BCH* 81 (1957) 558; *JHS* 77 (1957) Suppl.; *Philippson* 386.

A tholos tomb was excavated by Marinatos on a rather striking site dominating the north side of the entrance to Vöidhokoilia bay. The finds included "two small late Mycenaean vases."

61. *Palaiokastro* (mediaeval Navarino; classical Pylos or Koryphasion). Ill. 10

Ergon (1958) 148-50; *BCH* 83 (1959) 642.

The acropolis itself with the great Venetian fortress on its summit has often been described (cf. *JHS* 16 [1896] 1-54). On the south side of the entrance to Vöidhokoilia bay, and north of and below Palaiokastro there is a narrow, flat-topped ridge measuring ca. 200 m. N-S by 70 m. E-W.

A prehistoric habitation site occupied at least part of this narrower section almost immediately south of the entrance to Vöidhokoilia bay, where winds have thrown up great sand dunes on the east slope and a good part of the crest. Later habitation includes both the point directly above (south of) the bay entrance (where many very worn sherds are exposed on the surface), and a much larger area in the wider, fairly flat section sloping gradually up toward the steep northern cliffs of Palaiokastro itself. Here and in the narrower area to the north, wall foundations can be seen and some trenches have been dug.

Marinatos' excavation has revealed house walls and quantities of late prehistoric, C and H pottery. Among sherds in this area we recovered: some frgs. of coarse ware, smoothed and slipped, of gritty fabric, which could be pre-Mycenaean; 2 frgs. from monochrome painted stemmed bowls of LH III A-B; frgs. of LH III B long-stemmed kylixes, some with bases hollowed underneath, orange clay, mostly plain; painted examples usually monochrome; one with linear band decoration; frgs. from deep bowls, one with part of panelled pattern (ill. 8,E); considerable C pottery, 6th-4th cent.; H and R sherds. There is also some C-R pottery on the western and southern slopes of Palaiokastro itself and at the N-E edge of Sikia channel.

This LH settlement is the likeliest candidate so far known for the harbor town of the Englianos palace, which was (as usual) situated at a safer distance inland. There is some reason to connect the toponym RO-O-WA with the seaport of the capital. The entrance (or at least *an* entrance) to the harbor would appear to have been the channel now leading into the little Vöidhokoilia bay.

62. *Cave of Nestor* (Palaiokastro). Ill. 10

AJA 46 (1942) 539; 58 (1954) 32; *JHS* 74 (1954) 158.

This large and well-known cave in the N-E slope of Palaiokastro acropolis was inhabited in N times (cf. #59). Thereafter, its most intensive utilization seems to have been in LH III. Probably it served after neolithic times, as it does today, for protecting sheep and goats in bad weather.

63. *Vigla* (Midhen)*AJA* 48 (1939) 559.

The little hill called Vigla is above (east of) the south end of the Bay of Navarino. It is immediately west of the highway at a point ca. 425 m. S-W of Midhen where the road from Kalamata forks south to Pylos (ca. 2½ km.) and north to Chora. Two collapsed tholoi are located near Midhen. The first is ca. 130 m. N-E of Midhen (to which 203°) and ca. 20 m. east of the Chora road. The dromos faces 20° and the diameter is ca. 20 m. The second tholos is ca. 50 m. and 23° from the first. Their location was mentioned to us by Professor Blegen.

The Vigla habitation site is partially fallen down the steep cliffs into the bay ca. 70 m. below. What remains of the mound is ca. 50 m. in greatest diameter (E-W) and ca. 4 m. high.

There are very few surface sherds now visible on and around the Vigla mound and no evidence of habitation before LH III. We picked up one LH III B sherd near the first tholos.

The Vigla site has a commanding view over the bay just opposite its widest south entrance. It should have been an important lookout station in the LH III defense system. The tombs should presumably be connected with the habitation site.

Note: In the Pylos museum there are two celts which are said to have been found by Nikolaos Zorgianos of Pylos while digging the foundation of his house which is located on the S-E side of the highway approximately half-way between Midhen and modern Pylos. They seem to belong to the N period, being made of a soft whitish stone and with the long shape exactly like the celts in soft stone from Chandhrinou (#67).

64. *Kokkinia* (Schinolakka)

A habitation site on top of a ridge ca. 250 m. E-NE of Schinolakka village. Bearings to center of Pylos town, 212°; to Vouno tou Chandhrinou, 112°; to Palaiokastro, 264°.

The site is sharply delimited only to the north where there is a shallow gulley. The ridge continues at a slightly lower height both to the east and to the west, and there is an easy slope to the south. The village of Schinolakka occupies the western end of the ridge. Sherds are scattered over an area at least 125 m. E-W by 100 m. N-S. On the opposite slope ca. 200 m. to the south in an area called Akona there are reports of sherds, pithoi and small finds such as gems and bronze tweezers. We saw no sherds here, although thick wheat stubble made searching difficult. A good spring called Vourorema is located ca. 500 m. east of the habitation site.

The pottery is almost uniformly LH III B and represents standard shapes and fabrics. The finer wares are of a very soft light buff unpainted fabric reminiscent of such sites as #66 and #68. A couple of heavy bases of stemmed bowls may be LH III A.

This was a fairly small and rather isolated upland farming center. Grain now grows well here but vines

rather poorly. The finds reported from Akona are consistent with the presence of a cemetery on that slope.

65. *Koukounara**Praktika* (1954) 311; *Ergon* (1958) 150-52; (1959) 117-25.

An isolated hill called Katarrachi ca. 2 km. E-NE of Koukounara village, and immediately west of the deep gorge, the Potami tou Arapi.

Maximum dimensions of the hilltop are ca. 120 m. N-S by 72 m. E-W. There was occupation also on the easier west and south slopes. The precipitous slope to the east has a good spring. This is a very defensible site in rough country where distant view is precluded by its position in a hollow. Compass bearing to top of Vouno tou Chandhrinou, 127°. On the opposite (east) side of the gorge and slightly south of the habitation site in an area called Gouvalari, there are at least seven large rather conical (apparently artificial) mounds. This area is very rough, overgrown, and difficult to examine. Marinatos also reports a cemetery ½ km. N-W of the acropolis in an area called Akona.

On the acropolis heavy walls of undressed stone have been exposed by trenches. The excavator speaks of an "apsidal megaron" of LH I-II date. Surface pottery includes: MH splaying rims, imitating Minyan ware; MH coarse ware of hard gritty fabric (cf. #34, #52); LH I-II rims of goblets in soft buff clay; LH II-III frags. of tall kylixes in soft reddish fabric. A pit at the south end of the acropolis produced fine LH III A-B pottery. The burial mounds resemble the MH type for multiple burial, but Marinatos reports "Mycenaean" pottery from that area.

This seems to have been a fairly important settlement, especially in MH-LH I-II. Its isolated position and strongly defensive characteristics would suggest less than full participation in the later more unified political situation. Marinatos believes that it may be one of the "Big Nine" of the Pylos tablets, either PA-KI-JA or KA-RA-DO-RO. His reasoning for the association with PA-KI-JA is obscure; as for *Charadros* (i.e. "gorge," if this is really the correct transliteration) there is a possible association with the deep ravine of the Potami tou Arapi.

65. (A). *Lezega* (Koukounara)*Ergon* (1958) 152-54, figs. 157-59.

One tholos tomb (Marinatos' "Koukounara #1") was excavated at a spot called Londariti, ca. 1¼ km. N-E of Lezega (now officially Stenosia) village and 100 m. east of the deep gorge, the Potami tou Arapi. Compass bearings to Lezega church, 220°; to Koukounara church (ca. 1¼ km.), 334°. A second, larger tholos (Marinatos' "Koukounara #2") lies in an area called Phitia or Phities ca. 750 m. N-E of the first. Compass bearing to Koukounara, 292°. There are at least three other low tholos mounds in this immediate area, two toward the east and one ca. 100 m. to the west.

Pottery and other finds date tholos #1 to LH I and tholos #2 to LH II-III A.

The reddish color of the clay capping is apparently regular in tholoi of this area. Most of these tombs were constructed on level ground (cf. #23). The nearest habitation site so far identified is #65.

66. Koube (Chandhrinou)

The fine spring called Koube which has supplied Pylos town since the Turkish period lies ca. 400 m. north of the Kalamata-Pylos highway at a point ca. 1½ km. west of Chandhrinou village. The habitation site is ca. 300 m. W-SW of the spring and 100 m. north of the highway. Bearing to Vouno tou Chandhrinou, 103°.

Anastasios Therios of Chandhrinou opened an irrigation ditch here which exposed a good deal of pottery at a depth of ca. 1 m. below the modern surface. The sherds extend for at least 40 m. along the trench. Above (south of) the trench there are sporadic surface sherds for an extent of ca. 130 m. E-W by 80 m. N-S. A very low mound ca. 17 m. in diameter lies ca. 40 m. N-W of the habitation site. A second mound ca. 15 m. in diameter and 4 m. in height lies across the highway in an area called Ayios Athanasios. Bearing from site to Ayios Athanasios, 143°.

The sherds collected from the irrigation trench are uniformly LH III B, mostly unpainted, of soft buff fabric, and include fragments of bowls and high-stemmed kylixes. No sherds are visible on the Ayios Athanasios mound but ca. 20 m. to the N-E a few Mycenaean fragments were found.

It is natural to find a habitation site and associated tombs near the Koube spring.

67. Platania (Chandhrinou)

The habitation site is immediately west of the copious spring called Platania at the southern outskirts of Chandhrinou village.

The low mound has an approximate extent of 80 m. E-W by 50 m. N-S (minimum dim.).

Sherds (now in Pylos museum) exposed by bulldozer at the west edge include LH III B handles of kraters and deep bowls; A(?) and C. A line of pithoi was located during excavation for an aqueduct just east of the spring. One is now preserved in the basement of a nearby house. It does not seem to be prehistoric (H?).

This seems to have been a small site, but it has a fine water supply and a good location on the height of land with a fine view to north and west. A low circular mound is said by the villagers to have been visible before World War II in the center of the modern village and to have contained bones.

Note: Thirty very fine neolithic(?) celts now in the Pylos museum came from this area (cf. *BCH* 83 [1959] 641). They were found in 1958 by Vasilios Kiriakopoulos and Konstantinos Karabatos of Chandhrinou in a small space between large rocks which they were breaking up in an area called Kotronakia ca. 700 m. N-W of Chandhrinou. The find-spot is only 50 m. from the new Chandhrinou-Koukounara road in the property of Petros Papageorgiou. Bearings to the south end of Sphakteria, 240°; to Palaiokastro, 272°; to Vouno tou Chandhrinou, 136°. Eight of the celts are of a soft whitish-gray stone and are of the long type (Wace and Thompson Class A; cf. site #63). Twenty-two are of very hard dark gray stone and all finely polished. The larger proportion are of the short type (Wace and Thompson Class B). This may be the find-spot of the stone "axe" reported by Skias (*Praktika* [1909] 284) as having been found "near Chandhrinou."

68. Chilia Choria (Mesopotamos). Ill. 11

Ca. 350 m. north of the Kalamata-Pylos highway, the side road leading to Kremidhia intersects a well preserved section of Turkish *kaldirim* (stone cobbled road) with a ruined khan or inn, called Kiskira to Chani, just west of the intersection (cf. ill. 11,C).

The habitation site is on the level plateau ca. 150 m. south of D in fig. 11 in a field owned by Athanasiou Stasinopoulos of Mesopotamos (formerly Veli). Sherds are scattered over an area at least 100 m. by 50 m. At a point ca. 75 m. further south (ill. 11,A) there is an artificial mound ca. 15 m. in diameter and 3 m. high. It has many flat stones in the center among thick bushes.

Pottery from the site includes: rim of coarse pithos (ill. 8,H) and some coarse reddish pottery, perhaps MH-LH I; frags. of LH III B long-stemmed kylixes, some with traces of paint, of soft buff or reddish fabric.

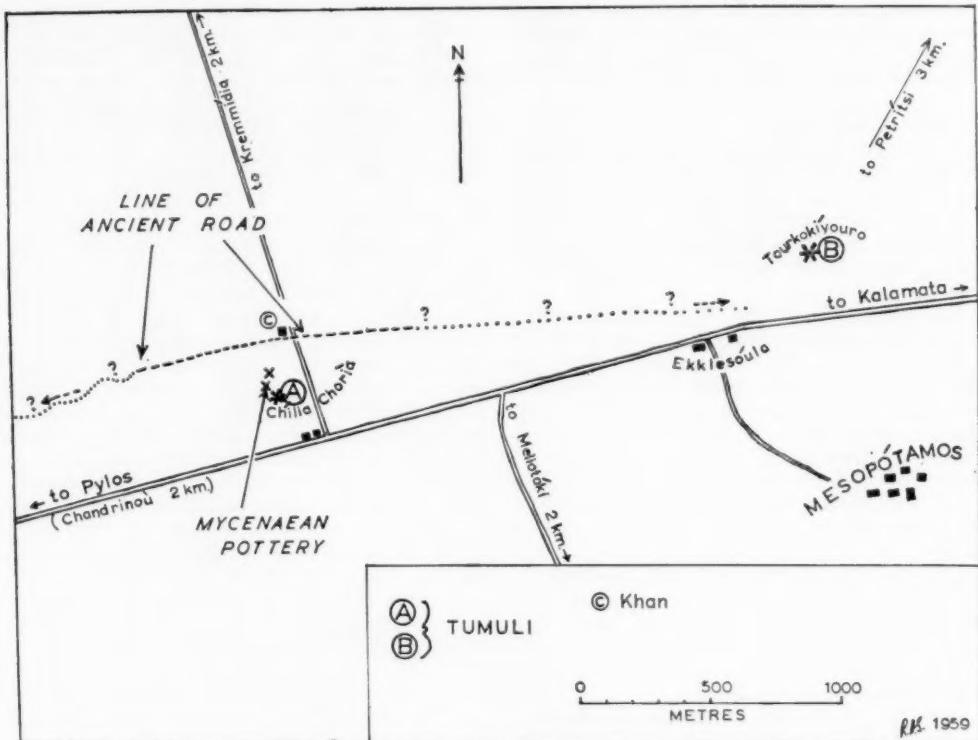
This small site, located exactly on the height of land (i.e. with a down-grade to the sea on the west and to the gulf on the east) and close to the highway of the Turkish period, is a very likely candidate for a stage (stop) on the main Mycenaean road connecting western and eastern Messenia (cf. Section III). The nearby mound may be associated with a MH-LH I phase of the settlement if, as the flat stones suggest, it is of the multiple burial type (cf. #50).

69. Tourkokivouro (Mesopotamos). Ill. 11, point B

A mound ca. 250 m. north of the Kalamata-Pylos highway at a point ca. 400 m. east of the side-road leading to Mesopotamos and ca. 200 m. east of the bus-stop called Ekkliousa. Compass bearings to Mesopotamos village (ca. 1 km.), 153°; to church in Petritsi (3 km.), 30°.

The mound is built on level ground (cf. #23, 65 A). It is ca. 13 m. in diameter and 2-3 m. high, with a red clay capping. The present property owner is Vasilis Milionis. We were told that the former owner at one time dug into the N-W (dromos area?) without discovering anything; also that extensive illicit excavation was made toward the center of the mound "20 years ago" by persons unknown. There is clear evidence of both these operations. No pottery is now visible on the surface.

This tholos tomb may be the origin of some of the prehistoric material (including a bronze cauldron) in the Kalamata museum. The antiquities were seized from Athanasiou Xidas (now deceased) who was an eccentric hermit living in an isolated spot N-W of Milionis village (cf. #70).



ILL. 11. Chilia Choria-Tourkokivouro (#68, #69)

70. *Ayios Elias* (Milioti)

An artificial mound on the crest of a ridge in heavily dissected country ca. 600 m. N-W of Milioti village. Bearings to church of Ayios Georgios on the western edge of Milioti, 123°; to isolated chapel of Panayia (ca. 700 m. distant) 210°.

The mound measures ca. 20 m. N-S by 17 m. E-W and 4.50 m. high. Some fairly large-scale probing has uncovered stone slabs and numerous fragments of large pithoi. There is another rather suspicious mound ca. 80 m. to the north. The whole area belongs to Georgios Ralis of Milioti. There are also indications of a site in Byzantine (and probably earlier) times on the hill crowned by the church of Ayios Georgios above an abundant spring. And many fragments of walls and late looking sherds occur at a site called Melisia on the north end of a ridge ca. 800 m. N-NW of Milioti.

Some of the pithos fragments have finger impressions (pl. 78,c, #3) and characteristic rim profile (ill. 8,G).

The mound appears to have contained multiple MH burials, of the type familiar at #43, #50. Petros Likesiotis of Chandrinou, who showed us the mound, confirms that the same Xidias (cf. #69) dug in it. It is therefore quite possible that the stone artifacts obtained from Xidias and now in the Kalamata museum originated here.

71. *Viglitsa* (Neromilo)

A tholos tomb located ca. 50 m. east of and slightly below the Kalamata-Pylos highway ca. 1½ km. west of Neromilo village where the road begins a series of sharp ascending curves. The site was mentioned to us by Professor Blegen. Bearing to Neromilo, 56°.

The mound is well defined but its dimensions are difficult to determine because it is built on a steep slope descending to the east. The height is ca. 5 m. and the diameter ca. 33 m. The dromos apparently faces west.

Note: It is quite possible that there was a prehistoric habitation site on the hill called Panayitsa just south of the Kalamata-Pylos highway at a point ca. 500 m. S-E of the Viglitsa tholos and 700 m. S-W of the bus-stop for Neromilo. The long axis of the hill is E-W with a chapel toward the western end. There are easy slopes on all sides and the whole hill is intensively cultivated in vines. A small spring is located ca. 200 m. to the S-W. Christos Likotrafitis of Neromilo who owns the eastern section discovered a large deposit of broken pottery which seems to be uniformly A. He says there are sherds everywhere below the surface and reports a "wall 100 m. long." There is a possible second tholos on the south end of a ridge ca. 300 m. S-W of Panayitsa.

72. *Gditi Rachi* (Mesochori)

A mound ca. 800 m. S-E of Mesochori village and 80 m. south of the track leading to Ripena. (This is one of several hillocks on the crest of the ridge on the northern edge of the Methoni plain, but the others seem to be natural.) Compass bearings to Methoni castle, 199°; to chapel of Ayios Theodhoros above Mesochori, 326°.

The mound is now very much eroded on top and the whole S-E side has fallen into a deep ravine. Its preserved diameter is ca. 15 m. and its height ca. 2 m. The owner is Panagiotis Kanelopoulos of Mesochori.

One frg. of thin straight rim may be EH (or earlier). Some bits of coarse ware, including one vertical jar handle, may be MH. One jar handle in soft buff fabric with streaky monochrome paint may be Mycenaean. Possibly Mycenaean also is a class of thin hard coarse ware.

This seems to have been a very small habitation site. The great conical hill called picturesquely *Tis Grias o Soros* (i.e. the burial mound of the old woman), rising in the eroded barren greyish wasteland ca. 1 km. to the south, is an entirely natural formation.

Cf. Appendix (f).

73. *Ayia Analipsis* (Phoinikounta). Ill. 12; pl. 77, a
Études 156-57 (s.v. Taverna, former name of the village); *BCH* 83 (1959) 641.

An acropolis immediately above (west of) the town of Phoinikounta. Its level top, ca. 75 m. N-S by 60 m. E-W, is the site of the church of Ayia Analipsis.

Prehistoric pottery is scattered quite thickly over the easy southern and western slopes, thinning out toward the north and east. The total area of habitation is ca. 180 m. N-S by 140 m. E-W. There are scattered medium sized stones especially on the S-E slopes. The site must once have extended further south, since the promontory has been eroded by the sea. Rough walls and sherds are visible in sections overhanging the 15 m. high cliffs above the sea. The water is very shallow here and in the harbor to the east. There are sandy beaches and small but fertile coastal plains on both sides of the acropolis. The eastern plain, extending 2½ km. inland, is much larger. There are Roman remains in the area marked E in ill. 12, just east of a good perennial stream. At C in ill. 12, called Palaiovoros, there is a possible prehistoric burial mound, near the ruined church of Ayios Konstantinos. The owner is Konstantinos Romvakis, mayor of Phoinikounta. Also point D in ill. 12, on the highest part of the headland called Mitaka or Palaioyeraki ca. 1 km. east of the acropolis, is a very likely site of a collapsed and eroded tholos tomb. Large squared blocks and some pottery are scattered on the steep slopes. On the hill called Ayia Paraskevi ca. 600 m. further S-E along the coast, some thin gritty sherds could be prehistoric. (We forego discussion of numerous later antiquities in this area.)

Among the sherds from the main acropolis are: many fine examples of EH wares, including frgs. of "Urfirnis" sauceboats and shallow bowls; a class of

gritty and micaceous coarse ware, probably EH; one sherd of MH imitation Minyan ware; two MH-LH I stems of goblets in reddish fabric; from LH III A-B, a false spout of a stirrup jar in red monochrome paint on buff fabric; several worn frgs. from kylixes, mostly short-stemmed with base hollowed beneath. From the tholos(?) at Mitaka, two frgs. of LH II-III monochrome painted stemmed bowls; one frg. of worked chert.

This was a fairly important site, both in EH and LH. Its position right on the seacoast is common for the former period but is not usual for a big Mycenaean settlement. Cf. Appendix (g) and (h).

74. *Charakopio*

Archeion (1954) 3-4; *Ergon* (1958) 154; *BCH* 83 (1959) 641.

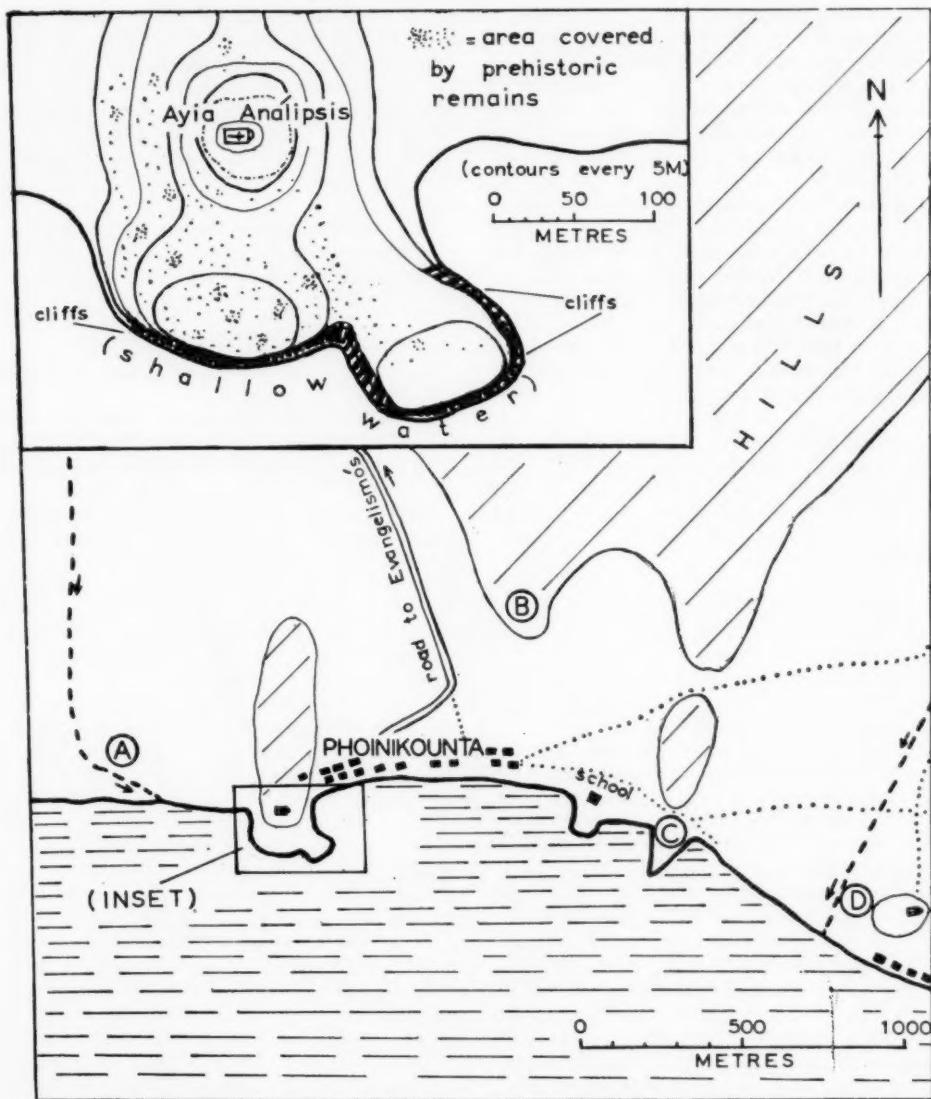
A tholos tomb was discovered accidentally in 1947 ca. 120 m. N-W of the new school building which is situated west of the main road to Petalidhi and ca. ½ km. north of the village of Charakopio.

The tomb was built into the north slope, with its dromos certainly in a general N-S direction, probably ca. 340°. The whole northern half was destroyed by the landowner, Panagiotis Yanoukas of Charakopio. The construction is rather poor, consisting of small flatish stones. The shape is high and conical. The interior is partially refilled (or never fully cleared) and the big lintel block is partly exposed.

No pottery is now to be seen. A bronze cauldron in the Kalamata museum is said to have been found here (cf. the cauldron from the Tragana tholos illustrated in *Ergon* [1955] fig. 7). It is of plated construction with bronze rivets and two small "ear" handles (cf. the di-pa shape recorded in Pylos tablets). Also a sword is supposed to have been found, but its whereabouts is unknown.

We searched intensively but vainly for a habitation site associated with this tholos. The area is extremely fertile and intensively cultivated, mainly in vines. One would expect a major Mycenaean center somewhere in the Charakopio vicinity. The hill crowned by the school and with the tholos on its north slope is a possibility, although rather large and difficult to defend. It has a good view to the west and fair to the north. There are several hills in the vicinity with remains of C and later periods. Another prehistoric grave (or graves), probably contemporary with the Charakopio tholos, was destroyed about six years ago on the property of Vasilios Vasilopoulos ca. 1 km. north of the tholos and 500 m. west of the main road, on the western outskirts of the village of Petriadhes. The reported contents include two large pithoi containing bones and ashes, ear-rings, and a bronze "pail" (gouvas). Frgs. of pithoi in thick "oatmeal" ware are still to be seen near the find-spot; also the heavy rounded rim of a bronze vessel is in the finder's shed. It has a diam. ca. 0.235 m. and two small symmetrically placed holes preserved in the body just under the rim.

Cf. Appendix (i).



ILL. 12. Ayia Analipsis (#73)

75. *Kaphirio (Longa).* Pl. 77,b

A large and imposing acropolis rising above the fertile coastal plain ca. 1 1/4 km. S-W of Longa and 3 km. from the sea to the east. It commands a fine view over the gulf to Taygetos, Kardhamili and Mani.

A full description of this site and of the surface finds will be given in the publication of the trial excavation conducted by Yalouris and McDonald, July 4-7, 1959. Habitation spans MH, LH III, PG, G(?), A(?), C(?) R. There is a possible tholos tomb under the chapel of Ayios Elias on an eminence ca. 750 m. to the N-W.

A small spring is located on the eastern slope, and an abundant water supply exists at Kephalovrisi, ca. 3 1/2 km. to the west.

This was apparently the major center controlling the extremely fertile Ayios Andreas-Longa coastal plain. (For the shrine of Apollo in C and later times at Ayios Andreas, cf. *Études* 174, 175 and references cited there.)

76. *Nichoria (Karpophora-Rizomilo).* Pl. 77,c
Archeion (1959) 207-10; *Philippson* 396.

A habitation center ca. 2 km. inland from the N-W

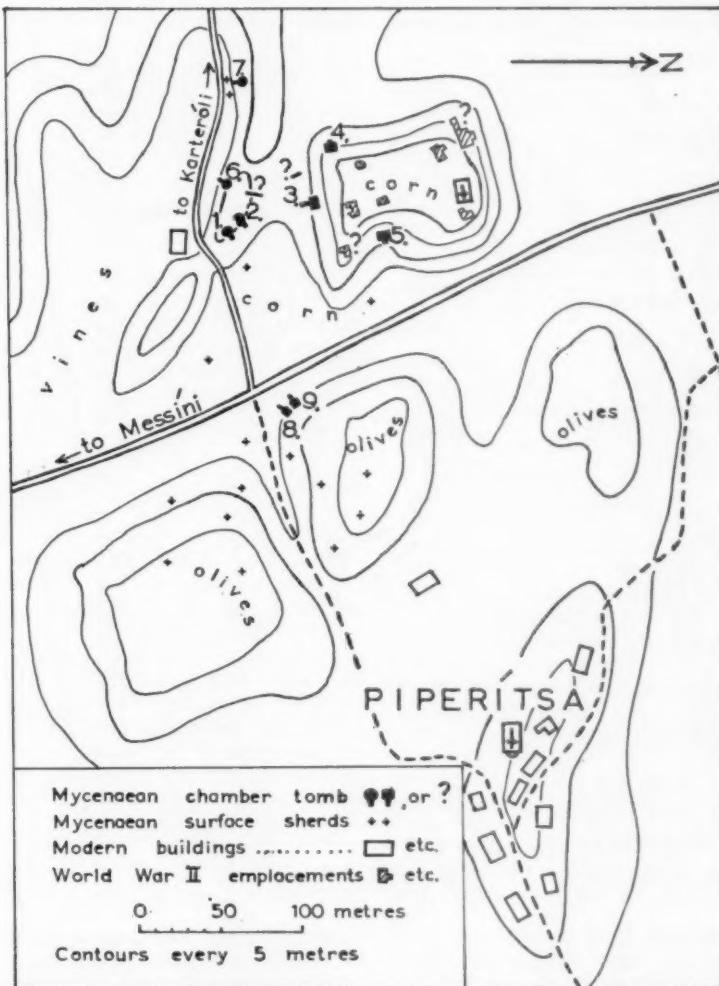
corner of the Messenian gulf. Prehistoric settlement was mainly on the S-E end of a ridge immediately above (S-W of) the hamlet of Rizomilo, which is located at the junction of the Pelatidhi-Koroni highway with that from Kalamata to Pylos. The village of Karpophora lies ca. 1 km. to the west. A full description of this site will be given in the publication of the trial excavation con-

tory indicates. The key is probably its strategic situation controlling the pass on the main land route between eastern and western Messenia.

77. *Ayios Konstantinos (Karteroli)*. Ill. 13

Hope Simpson 246, fig. 7; Études 64.

On the Messini (Nisi) to Ithome (Mavromati) high-



ILL. 13. *Ayios Konstantinos (Karteroli) (#77)*

ducted by Yalouris and McDonald, July 8-12, 1959. Habitation spans MH, LH, SM(?), PG, G, C, R. There are at least four tholos tombs, and extensive cemeteries from LH and other periods have been located. The Karya river immediately to the north supplies plentiful water for most of the year.

This is a site of capital importance, as its long his-

way at the turn-off to Karteroli village, which is ca. ½ km. to the west of the highway.

Chamber tombs have been discovered in the south and S-E slopes of the largest hill to the west of the highway, called Ayios Konstantinos from the chapel at its north end. Other tombs occur on both the northern and southern slopes of the low hill to the north of the road

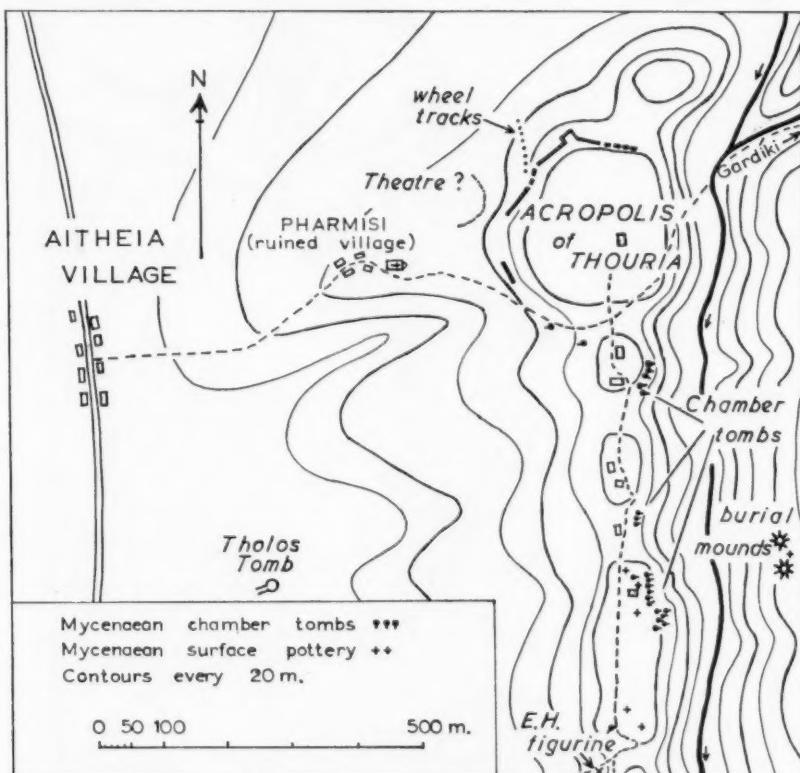
to Karteroli; and two tombs (one used as a *kamini* or lime-kiln) can be seen in the western slope of the hill called Rachi Papalia on the east of the highway and north of the road leading east to Piperitsa village. There is a spring in Karteroli village.

Frgs. of LH III deep bowls or kylixes, monochrome orange or black; rough coarse ware, reddish thin fabric, of Mycenaean date.

A total of nine certain and at least four probable chamber tombs is evidence for a sizable settlement.

The imposing ridge called Ellinika rises some 100 m. above the plain and stretches N-S for ca. 1 km: above (east of) the Kalamata-Megalopolis highway in the neighborhood of the village of Aitheia.

Ca. 300 m. east of the highway and just above the south edge of Aitheia village in a field belonging to Poulos Phatouros, on a terrace ca. 30 m. above the highway, the dromos of a tholos tomb has been exposed. The dromos faces 245° and is lined with six courses of sawn limestone blocks. The outer lintel



ILL. 14. Ellinika (Thouria) (#78)

The habitation area most likely included the top of Ayios Konstantinos and Rachi Papalia immediately east of it across the highway. On the top and S-W slopes of the latter a fair number of LH III B sherds occur on the surface.

This is the only certain Mycenaean site so far known on the west side of the great Pamisos valley.

Cf. Appendix (j).

78. *Ellinika* (classical Thouria). Ill. 14; pl. 77,d
Hope Simpson 243-45, fig. 6; *Études* 56-62; *BCH* 83 (1959) 640, 641; *Archeion* (1959) 145-49; *ArchEph* (1911) 117, 118.

block is missing. Two large slabs, now out of place, were the vertical jambs of the doorway. The beginning of the curving wall of the tholos chamber can just be made out. There are two (probably ancient) robber tunnels, one on either side of the dromos.

There is also a newly found chamber tomb on the south side of the track below (south of) the acropolis at a point ca. 100 m. S-W of the summit. Compass bearing to church of Ayios Chrysostomos in abandoned village of Pharmisi, 291°. Four new chamber tombs have recently been identified in the east slope of Ellinika ridge, bringing the total to 25. For the pottery associated with these tombs, cf. Hope Simpson's article

cited above. Across (east of) the deep gorge of the stream called Xerilas or Xeropotamos, directly opposite the southern acropolis of the Ellinika ridge, in an area called Kastroulia, near the edge of the gorge, there are two conical artificial mounds which are very likely tholoi. The northern is ca. 10 m. in diameter and 5 m. high; the second, ca. 40 m. to the S-W, is ca. 10 m. in diameter and 4 m. in height. A red capping over white clay can clearly be seen in the south side of the first, where ploughing has exposed it. Near the second we found two flakes of obsidian; three ring bases from LH III deep bowls; two frags. from monochrome painted LH III kylixes; frags. of plain kylixes.

Ellinika, in addition to being a large and relatively well-preserved Iron Age site (especially on the northern acropolis called Palaiokastro), now emerges as one of the most impressive Mycenaean centers of the whole area. This prosperity might be expected in terms of the tremendous fertility of the great valley to the west. The habitation site associated with the numerous tombs is still not certainly identified. The acropolis of Palaiokastro is very large, even for a Mycenaean town of the first rank, and no prehistoric pottery is to be seen on the surface. Our latest examination suggests that the main habitation center may have been the defensible and fairly large (ca. 300 m. x 100 m.) acropolis at the southern end of the Ellinika ridge.

79. *Kastro* (Kalamata)

Archeion (1954) 3, 8; *Etudes* 45-55; *Hope Simpson* 242, 243; *Philippson* 406-08; *BCH* 83 (1959) 640.

We repeat Hope Simpson's opinion that, in view of the Mycenaean cemetery on the hill of Tourles slightly N-E of Kalamata castle, the contemporary habitation site must have been centered on the rugged and impressive acropolis. So far, however, no prehistoric pottery has been found on its slopes, and we are skeptical about the statement (*BCH* 83 [1959] 632) that parts of the ancient walls on the Kastro go back to Mycenaean times. Yalouris' recent excavations in the lower town make it increasingly difficult to doubt that historic Pherai was at Kalamata. A to R finds at Akovitika only 800 m. from the present coast disprove theories of extensive recent change in the coast line.

80. *Kokkinochomata* (Pigadlia)

Hope Simpson 240; *Archeion* (1954) 7; (1956) 86.

Re-examination of the pottery originating from these caves and now in the Kalamata museum, indicates that possibly some of the coarse ware is N or EH. Another class may be MH. Mycenaean material includes a hollowed base of LH I stemmed bowl; sherds of LH II-III A stemmed bowls, monochrome paint; frags. in monochrome red on buff fabric LH III B-C (?). A kylix stem may be SM rather than MH-LH I; a 2-handled vessel has PG parallels.

81. *Zarnata* (Kambos)

ArchEph (1891) 189-91; *Hope Simpson* 236-39, fig. 4.

We have nothing to add to Hope Simpson's discussion referred to above, except to record a couple of useful diagnostic sherds picked up in the dump just outside the dromos. One is from a stemmed bowl of LH II-III A with a splaying rim and monochrome paint; the second is part of the base of a deep bowl of LH III A-B, with streaky monochrome paint.

Note: Under this site we include the "Neolithic" cave (discussed in *Hope Simpson* 239) which is ca. 3½ km. to the S-W.

82. *Kastro* (Kardhamili)

Hope Simpson 234-46, fig. 3.

No important new evidence was found in a 1959 inspection.

83. *Leftro* (Stoupa)

Hope Simpson 233-34, fig. 2.

We note that the soil in this area has a reddish color (cf. #38) and the water supply is so limited that grain will not now mature. If conditions were the same in the Mycenaean period, it would be very unlikely that an important town, such as the RE-U-KO-TO-RO of the Pylos tablets, would have been located here.

84. *Svina* (Koutiphari)

Hope Simpson 232.

In *BCH* 83 (1959) 641 the head of a clay figurine (*Hope Simpson*, plate 50, a) is ascribed to the 7th century B.C. (cf. fig. 23), while in *BCH* 82 (1958) 714 and *JHS* 77 (1957) Suppl. 10 it is called "probably geometric." The piece is of unique type and difficult to date; but we are inclined to place it within LH III to PG and to re-emphasize its slight similarities with the "Lord of Asine" (*Hope Simpson, loc.cit.*).

Summary List of Sites

	N	EH	MH	LH	SM	PG	G	A	C	H	R
1. Ayios Andreas (Pheia)	N	EH	MH	LH	SM	PG	G	A	C	H	R
2. Anemomilo (Skaphidia)	—	EH	—	LH?	—	—	—	—	—	—	—
3. Sodhiotissa (Ayios Ioannis)	—	EH?	—	LH?	—	—	—	—	—	—	—
4. Vromoneri (Varvassaina)	—	—	MH	LH	—	—	—	—	—	—	—
5. Palaiopyrgo (Salmone)	—	—	MH?	—	—	PG	—	—	C	H	—
6. Etia (Lantzoi)	—	—	—	LH	—	—	—	—	C	H	—
7. Drouva (Olympia)	—	—	—	LH	—	—	—	—	—	—	—
8. Altis (Olympia)	—	—	MH	LH?	—	—	G	A	C	H	R
9. Oinomaos (Pisa)	—	—	MH	LH?	—	—	—	—	C	H	R

	N	EH	MH	LH	SM	PG	G	A	C	H	R
10.	Tourla (Aspra Spitia)	—	EH?	MH?	LH?	—	—	—	C	H	—
11.	Palaiokastro (Tripes)	—	—	—	LH	—	—	—	C	—	—
12.	Ayios Georgios (Epitalion)	—	—	—	LH	—	—	—	—	—	—
13.	Dardiza (Epitalion)	—	—	—	LH?	—	—	A	C	H	—
14.	Ayios Elias (Makrisia)	—	—	MH	LH	SM?	—	—	—	—	—
15.	Kania (Makrisia)	—	—	—	LH	—	—	—	—	—	—
16.	Yerakovouni (Makrisia)	—	—	MH?	LH	—	—	—	—	—	—
17.	Koutsochira (Diasela)	—	—	—	LH	SM?	—	—	—	—	—
18.	Kastro (Tripiti)	—	—	MH?	LH?	—	—	—	C	H	—
19.	Klidhi (Derveni)	—	EH	MH	LH	—	—	—	—	—	—
20.	Nestora (Kakovatos)	—	—	MH	LH	—	—	—	C	H	R?
21.	Ayios Demetrios (Lepreon)	—	EH	MH	LH	—	—	—	C	H	R?
22.	Kastro (Kyparissia)	—	—	MH	LH	—	—	—	C	H	R
23.	Akourthi (Kopanaki)	—	—	—	LH	—	—	—	C	—	—
24.	Stylari (Kopanaki)	—	—	—	LH	—	—	—	C	H	—
25.	Panayia (Chrysochori)	—	—	—	LH?	—	—	—	C	H	—
26.	Ayios Demetrios (Actos)	—	—	—	LH?	—	—	—	C	H	R
27.	Malthi (Dorion)	N	EH	MH	LH	—	—	—	—	—	—
28.	Xerovrisi (Vasiliko)	—	—	—	LH	—	—	A	C	H	—
29.	Ayios Taxiarchos (Polichni)	—	—	MH?	LH?	—	—	—	—	—	—
30.	Chasna (Mandhra)	—	—	—	LH	—	—	—	—	—	—
31.	Krebeni (Kato Melpia)	—	—	—	LH	—	—	A?	C	H	—
32.	Karatsadhes (Loutro)	—	EH?	MH?	LH?	—	—	—	—	—	—
33.	Kokkala	N?	EH?	—	LH?	—	G?	—	—	—	—
34.	Koutsouveri (Margeli)	—	—	MH	LH?	—	—	—	—	—	—
35.	Kastro (Chalvatsou)	—	—	MH?	LH?	—	—	—	—	—	—
36.	Kouphieros (Pedhemenu)	N	—	—	—	—	—	—	—	—	—
37.	Ordhines (Langouvardhos)	—	EH?	MH?	LH	—	—	—	—	—	—
38.	Kanalos (Gargaliani)	—	—	MH	LH	—	—	—	C	H	R?
39.	Tsouka (Pyrgaki)	—	—	MH	—	—	—	—	—	—	—
40.	Lagou (Ambelofito)	—	—	—	LH	—	—	—	—	—	—
41.	Volimidia (Chora)	—	—	—	LH	—	G	A?	C	H	R
42.	Ano Englianios (Palace of Nestor)	—	—	MH	LH	—	—	—	—	—	—
42(A).	Chourou (Pisaski)	—	EH?	—	LH?	—	PG	—	—	—	—
43.	Kaldamou (Levki)	—	—	MH	—	—	—	—	—	—	—
44.	Kapoureika-Diakoupia	—	—	MH?	—	—	—	—	—	—	—
45.	Voroulia (Tragana)	—	—	MH	LH	—	—	—	—	—	—
46.	Tragana	—	—	—	LH	—	PG	—	—	H	—
47.	Koukouyera (Tsitsiras)	—	—	—	LH	—	—	—	—	—	—
48.	Routsi (Myrsinochori)	—	—	—	LH	—	—	—	—	—	—
49.	Papoulia	—	—	—	LH	—	—	—	—	—	—
50.	Ayios Ioannis (Papoulia)	—	—	MH	—	—	—	—	—	—	—
51.	Kretharetses (Platanos)	—	—	MH?	LH?	—	—	—	C?	H?	—
52.	Traganes (Iklaina)	—	—	MH	LH	—	—	—	—	—	—
53.	Gouvitses (Iklaina)	—	—	—	LH?	—	—	—	—	—	—
54.	Panayia (Iklaina)	—	—	MH?	LH	—	—	—	—	—	—
55.	Portes (Koryphasion)	—	—	—	LH	—	—	—	C	H	—
56.	Beyler Bey (Koryphasion)	—	—	—	LH	—	—	—	—	—	—
57.	Charatsari (Koryphasion)	—	—	MH	LH	—	—	—	—	—	—
58.	Palaiochori (Gialova)	—	—	—	LH	—	—	—	—	—	—
59.	Prophitis Elias (Voidhokoilia)	N?	EH	MH?	—	—	—	—	—	—	—
60.	Voidhokoilia (Bouphras)	—	—	—	LH	—	—	—	—	—	—
61.	Palaiokastro (Navarino)	—	—	—	LH	—	—	—	C	H	R
62.	Cave of Nestor (Palaiokastro)	N	—	—	LH	—	—	—	C	—	—
63.	Vigla (Midhen)	N	—	—	LH	—	—	—	—	—	—
64.	Kokkinia (Schinolakkia)	—	—	—	LH	—	—	—	—	—	—
65.	Koukounara	—	—	MH	LH	—	—	—	—	—	—
65(A).	Lezega (Koukounara)	—	—	—	LH	—	—	—	—	—	—

	N	EH	MH	LH	SM	PG	G	A	C	H	R
66. Koube (Chandhrinou)	—	—	—	LH	—	—	—	—	—	—	—
67. Platania (Chandhrinou)	N	—	—	LH	—	—	—	A?	C	H?	—
68. Chilia Choria (Mesopotamos)	—	—	MH?	LH	—	—	—	—	—	—	—
69. Tourkokivouro (Mesopotamos)	—	—	—	LH	—	—	—	—	—	—	—
70. Ayios Elias (Milioti)	—	—	MH	—	—	—	—	—	—	—	—
71. Viglitsa (Neromilo)	—	—	—	LH	—	—	—	A	C	—	—
72. Gdhitte Rachi (Mesochori)	—	—	MH	LH?	—	—	—	—	—	—	—
73. Ayia Analipsis (Phoinikounta)	—	EH	MH?	LH	—	—	—	—	C	H	R
74. Charakopio	—	—	—	LH	—	—	—	—	C	H	R
75. Kaphirio (Longa)	—	—	MH	LH	—	PG	G?	A?	C	—	R
76. Nichoria (Karpophora-Rizomilo)	—	—	MH	LH	SM?	PG	G	—	C	—	R
77. Ayios Konstantinos (Karteroli)	—	—	—	LH	—	—	—	—	—	—	—
78. Ellinika (Thouria)	—	EH	—	LH	—	PG?	G?	A	C	H	R
79. Kastro (Kalamata)	—	EH?	—	LH	—	—	G	A	C	H	R
80. Kokkinochomata (Pigadchia)	N?	EH?	MH?	LH	SM?	PG?	—	—	—	—	—
81. Zarnata (Kambos)	N?	—	—	LH	—	—	—	—	C	H	—
82. Kastro (Kardhamili)	—	EH?	MH?	LH	—	—	—	—	C	H	R
83. Leftro (Stoupa)	—	—	MH?	LH	—	—	—	—	C	H	R
84. Svina (Koutiphari)	—	—	—	LH	—	PG?	G?	A	C	H	R

Appendix

We have included here a number of individual sites as well as whole areas which for various reasons could not logically be listed in the Catalog of Sites above nor entered in the maps. In most cases our results are negative, i.e. we found no convincing evidence for prehistoric occupation although such has sometimes been alleged or assumed. There are also a few attractive sites which we have not yet had an opportunity to explore, and a small group for which our evidence is very tentative or does not bear primarily on the Mycenaean period.

(a) *Heraea*. Situated near the N-E point of the confluence of the Ladon and Alpheios rivers. This appears to have been an important classical site, and on or near it an EH gold sauce-boat is said to have been found. Cf. *Archaiologikon Deltion* (1931/32) 57; *JHS* 44 (1924) 163-65.

(b) *Pavlitsa* (Phigaleia). Situated in the rugged and now very isolated interior near the north bank of the Neda river, this is a large and relatively well preserved C site. Sections of fortifications, a fountain, and the lower sections of several buildings are still visible above ground. Several inscribed blocks, one of the A period, are built into the walls of modern houses. The only indication of prehistoric habitation is a LH (?) seal-stone said to have been found here and representing two "demons" confronting a human. Cf. Curtius, *Peloponnes I*, Taf. VI; Milchhöfer, *Anfang der Kunst* 54, 55; Ridgeway, *Early Age of Greece* I, 29, 117; *BCH* 45 (1921) 403; Evans, *Palace of Minos IV*, 466, fig. 390.

(c) *Vounaki*. An isolated hill rising ca. 40 m. above the shore and immediately east of the railroad line at a point ca. 2½ km. north of Kalonero (which is the

first station north of Kyparissia). The hill forms the southern limit of the coastal plain and the land around it and to the south is much less fertile than to the north. It is very regular, almost circular, and its top is somewhat pointed. It is much overgrown and difficult to examine, but the extremely uneven upper area is no more than 50 m. by 50 m. The slopes are not steep except at the west where the angle is sharpened by the railroad cut. We saw no pre-classical pottery and the site seems wrong for prehistoric habitation. The "Cyclopean" walls reported by Valmin on the summit appear to be natural broken rock formations. There are some tumbled blocks on the lower eastern saddle, probably from fortifications of the historic period. In the same area we found late C and H sherds. Valmin is correct in pointing out the strategic importance of the spot in controlling the coastal route, but he probably errs in equating it with classical Aulon (cf. Meyer, *RE* Vol. 23:2 [1959] Col. 2149). At no period can this hill have been more than a small fort or lookout post. Certainly the evidence at present available is not sufficient to support the weight placed upon it by Palmer in connection with the Late Bronze Age topography. Cf. *Études* 109-11 and fig. 17; Palmer, *Minos IV* (1956) 120-45, esp. 134; Philippson 364.

(d) *Pyrgaki-Ambelofito*. Ca. 400 m. west of the highway on the south edge of the plateau north of Chora in an area called Kato Chori (bearing 113° to center of Chora village), Athanasios Athanasopoulos of Pyrgaki found what appears to be a stone axe-head with bored hole for hafting (now in the possession of Professor Demetrios Krekoukias, Athens). A small area here ca. 20 m. E-W by 40 m. N-S is strewn with sherds which are difficult to date but probably late (R or Byzantine?) in the main. We noticed among the many stone piles several examples of roundish holes in vari-

ous rough pieces in a reddish sandstone somewhat like the "axe-head" already mentioned. It is quite possible, therefore, that they have to do with a natural process of weathering and water action, rather than prehistoric human technology.

(e) *Pylos District.* Three items seem particularly to merit inclusion, although we have not been able to verify the information. "Mycenaean" pottery is reported from a conical hill called *Ali Chodza* on the ridge about opposite (south of) Ano Englianos and north of the Koryphasion-Platanos road. There is a spring on its south flank. Another site called *Loutro* is within the Iklaina-Platania-Papoulia triangle. As the name suggests, it has a fine water supply and is said to have yielded much "Mycenaean" pottery and a spindle-whorl(?). The third site is a very conspicuous conical hill called *Ayios Elias* near the village of Vlachopoulos which is N-W of the Matarangka mountain.

(f) *Methone Plain.* There ought to have been a major LH habitation site somewhere in or around the edge of this fairly large and fertile area. We searched persistently without locating a satisfactory candidate. Valmin (*Etudes* 153) found a Mycenaean steatite whorl within the great Venetian castle on the coast, but we doubt if this was a prehistoric site. At most it would have been a small port town. Cf. the contrary opinion expressed earlier in *Hope Simpson*, 252.

Valmin (*Etudes* 151) seems to be referring to a hill called Palaiokastro when he reports that ca. 700 m. from Néroula "s'élève une colline basse, dont le sommet est couvert de tessons de vases de toute époque, la plupart byzantins, mais aussi de quelques tessons mycéniens." He refers to evidence of a "mur d'enceinte" and continues: "la colline pourrait peut-être nous fournir des éclaircissements sur la ville mycénienne." Palaiokastro is a spur protruding slightly from higher hills lining the N-E edge of the plain, ca. 3 km. N-E of Methone. It rises gently ca. 40 m. above the plain and has a top area approx. 160 m. by 80 m. It is a reasonably attractive location, but we found not a single scrap of prehistoric pottery. One black glaze fragment could be G; everything else appears to be C or later. Graves discovered on the N-E slopes appear to be R or later. We must therefore express strong reservations about Valmin's suggestion. Marinatos (*Ergon* [1959] 125) mentions "mounds in the area of Methone, at least some of which conceal tholos tombs." Cf. also Philipsson 390, 391.

(g) *Lower West Coast of Messenian Peninsula.* We refer here to the islands of Sapienza, Ay' Mariani, Schiza, Venetiko, and the west coast of the lower peninsula between Phoinkounta (#73) and Cape Akritas (Cavo Gallo). We examined this difficult area with some care by boat without discovering a single vestige of prehistoric habitation. It is in general a rocky, barren and forbidding area, quite unlike the kind of country we have come to feel was attractive to Mycenaean settlers. Cf. Philipsson 392, 393. In fact, it is our opin-

ion that Valmin (*Études* 156-163) overestimates settlement here even after the Bronze Age. We saw no pottery which is indisputably earlier than R. We did not succeed in exploring the cave on Schiza which Valmin describes in *OpAth* 1 [1953] 44-46, pl. II, 3. He believes that most of the pottery is clearly prehistoric, handmade, and to judge from its decoration MH or perhaps Middle Minoan with local Kamares technique. This was most likely an isolated cult spot rather than a habitation site.

(h) *Lower East Coast of Messenian Peninsula.* We examined the lower east coast of the peninsula from Cape Akritas up to Korone with negative results as far as prehistoric habitation is concerned (cf. *Études* 164-69; Philipsson 394, 398). There is a change ca. 2½ km. south of Korone from a reddish soil and broken rocky surface to yellowish or whitish sandy marl with rolling country much more susceptible to cultivation; so that there might have been a LH settlement south of Korone. But the promontory of classical Asine, now occupied by the Venetian castle of Korone, is not itself a likely candidate for a prehistoric settlement. Valmin recorded a sherd of proto-Corinthian pottery, and among the contents of the little local collection as well as sherds we picked up, there is nothing earlier than A. This negative evidence should serve as a warning against a hasty equating of Korone-Asine with the Rhion of the Pylos tablets (cf. *Minos* IV [1956] 132ff and the cautious reference in Ventris-Chadwick, *Documents in Mycenaean Greek* 142, 186).

(i) *Arapochori (Nea Koroni).* An artificial mound located ca. 1½ km. west of Nea Koroni and within 35 m. of the home of Christos Dimakeas. It is ca. 12 m. in diameter and has steep sides ca. 4 m. high. Compass bearings to Nea Koroni church, 90°, to Vounari church, 130°. This whole area is studded with remains of the Byzantine and Turkish periods, and at least the upper part of the mound may be late. But the discovery of a Mycenaean steatite whorl within 10 m. of its base strengthens the impression that the mound originates in the prehistoric period. One sherd of reddish fabric might be Mycenaean. A similar mound is located ca. 3 km. W-SW of Arapochori in an area called Potamia. The pottery in the vicinity also seems to be late. Bearings to Vounaria, 116°; to chapel of Ipandi tou Christou near Mistraiki, 236°.

(j) *West Side of Pamisos Valley.* We have done too little exploration here to speak with much confidence. There should be several sites among the lower hills in this extremely fertile section (cf. Philipsson 403, 404).

Androussa. It was suggested in *Hope Simpson* 255 that this might be a LH site. But, although the castle hill has a fine position, no ancient sherds were found in the vicinity, and there is no good water supply nearby.

Samarina. A second visit confirms the impression expressed in *Hope Simpson* 246 that this is not a pre-

historic site. In fact we found no ancient sherds. The graves in the south and west slopes above the church are Byzantine or later. The outlying buildings connected with the monastery extended up these slopes where there are cisterns filled by small springs. A large spring called Samarorvisi is located ca. 700 m. south of the church, and the little valley is in general fertile in contrast to the barren country surrounding it.

Mavromati (Messene). We failed to find any evidence to support the note in *RE Suppl.* VI, 607 that there are Mycenaean remains "am Ostabhang," as mentioned in a letter from Valmin. There is a fine water supply, but the area is isolated and rather barren.

Sterna. A village situated on the east bank of the Velika river, here called the Voridas. There is an extremely copious spring in the village square and only ca. 10 m. above the river level. We searched a hill called Palaiopyrgos ca. 1½ km. N-W of the village and on the west bank of the river. It has extensive mediaeval remains but no certainly ancient sherds were found. The fine position of the hill in terms of defensibility and water supply suggest that further search might be worthwhile.

(k) *Tsoukaleika*. A kastro situated on a relatively high, rocky and barren hill (somewhat resembling the Malthi-Dorion acropolis) and immediately above the hamlet of Tsoukaleika. Cf. *Études* 71-74, where mention is made of fortifications and "two sherds which seem to be Mycenaean." Cf. also *Bull. Lund* (1933/34), 12; *Adr. Gebiet* 41-42. A search in spring 1957 by Messrs. Hope Simpson and David French turned up no prehistoric pottery and indeed very little surface pottery of any period.

(l) *Pidhima*. Valmin (*Études* 53) says that excavation shows sherds of all epochs since the Mycenaean. The site is very difficult of access, high above the source of the Kalamata water supply located ca. 7 km. north of Aipeia and 2 km. east of the main highway. We could not find any surface pottery here earlier than Byzantine. The site gives the impression of a mediaeval refuge, and is quite unlike Mycenaean centers. On the other hand, a LH site in this general area would be quite likely.

(m) *Volimnos* (Artemisia). Situated on the east slope of a high secluded valley, ca. 1½ hours on foot to the north of the Langadha route from Kalamata to Sparta, and ca. 5 km. N-W of the village of Artemisia (formerly Sternitsa). Its position is so occluded that no useful landmarks are visible from it and it cannot be found without a guide. From the highway at a point ca. 3 to 4 km. west of Artemisia one climbs to the top of the ridge to the north, from which the site is visible to the N-E ca. 500 m. distant. It is marked by the chapel of the Panayia (the full name is Volimnos Panayia Kapsoherovolousa). Actually one hears "Volimnos" in local speech.

The area of ancient occupation extends ca. 200 m. N-S by 100 m. E-W on terraces below (west of) the

chapel. There is a good well 10 m. south of the chapel. Surface sherds are copious. PG fragments include a jug neck and a krater piece, both with concentric compass-drawn semicircles and lattice pattern; high conical feet of skyphoi. Also G and A pottery. A fragment from a (male?) clay figurine in the Kalamata museum seems to be G or A. A small bronze harpy also in the Kalamata museum is A. C and H sherds. A column drum and several squared blocks near the chapel should be C or H.

The site is completely cut off from the Kalamata plain and also from the fairly fertile Alagonia-Artemisia area. It seems to have been a place of refuge in the PG and G periods. Later it apparently became a shrine, locally reputed to have been that of Artemis Limnatis. Mycenaean pottery is so far lacking, and one would not expect a Mycenaean site here except perhaps in the very latest phase of LH III and SM. Cf. *Études* 194.

(n) *Ayios Georgios* (Mandhinia). A fairly isolated hill crowned by the chapel of Ayios Georgios. The hill is below and ca. 500 m. N-W of the ruined village of Mikra Mandhinia. Compass bearings from site to village, 130°. An area ca. 120 m. E-W by 60 m. N-S is strewn with sherds and tiles. There is also scattered pottery on the opposite (north) slope and around a house ca. 150 m. east of the chapel. Definite C black glaze on the main hill. The gold cups described in *Hope Simpson* 239, 240 were reportedly discovered ca. 1 km. east of this site.

(o) *Vigla* (Ayios Demetrios). A little hill on the north flank of a slope ca. 400 m. south of the fishing village of Ayios Demetrios in the Selenitsa area. There are some rough micaceous gritty sherds which could be EH.

(p) *Trakhila*. In *Hope Simpson* 232 it was said that this site might be Mycenaean. A visit in 1960 proves that this is certainly not the case, although there are ancient sherds near the shore ca. 1 km. south of the village.

III. GENERAL SUMMATION

We have purposely avoided the use of the heading "Conclusions" for this section. As was emphasized in the Introduction, our main purpose is to put before interested scholars in one convenient spot the evidence uncovered by earlier or contemporary researchers and ourselves bearing on the prehistoric habitation of southwest Peloponnese. This we have done to the best of our ability in the preceding Catalog of Sites.

In our opinion the time is not yet ripe for a comprehensive synthesis with far-reaching general conclusions. The following paragraphs are merely a summary of the information assembled in Section

II (cf. Summary List of Sites), with some scattered and (we hope) cautious observations based on our admittedly incomplete research in the area.

From the Neolithic period (cf. pl. 73) the finds are very meager and scattered. The cave of Nestor (#62) on the west coast and the cave at Pedhemenu (#36) deep in the interior provide the only reliable evidence for that characteristic type of habitation.⁹ An analogous situation is observed in open-village sites at Ayios Andreas (#1) on the coast and Malthi (#27) well inland. Both of the latter are large, high acropolises in commanding positions.¹⁰

In Early Helladic times (cf. pl. 73), inhabited sites were somewhat more numerous than before. Ceramic proof exists for villages at the following locations: Ayios Andreas (#1), Anemomilo (#2), Klidhi (#19), Ayios Demetrios (#21), Malthi (#27), Prophitis Elias (#59), Ayia Analipsis (#73), Ellinika (#78). And to these may be added with varying degrees of probability: Sodhiotissa (#3), Tourla (#10), Karatsadhes (#32), Kokkala (#33), Ordhines (#37), Chorou (#42A), Kalamata (#79), Kokkinochomata (#80), Kardhamili (#82).

Of the former group, 5 out of 8 are directly on the sea or very near it; of the second group again 5 out of 8. Eleven of the most strategic spots inhabited throughout the later Bronze Age are represented. Habitation continued at the two Neolithic open village sites, but the caves probably ceased to be used as dwelling places. There is perhaps some suggestion of concentration in the Alpheios area and in the upper and lower sections of the eastern Messenian plain. EH sites are conspicuously sparse in the Pylos area, which has much the heaviest concentration throughout the later Bronze Age.¹¹

⁹ Cf. possible N pottery from caves at Pigadha (#80) and near Kambo (#81). There are caves near the find-spot of the celt at Midhen (#63). Marinatos (*Ergon* [1955] 88) mentions pottery "perhaps including neolithic" found in a small cave called Katavothra just outside Chora village (contiguous with Volumidhia #41).

¹⁰ Cf. also possible Neolithic at Prophitis Elias (#59), which would tie in with the cave of Nestor evidence. The celts from near Chandrinou (#67) may indicate a habitation site nearer the fine Platanias spring. The evidence for Neolithic at Kokkala (#33) is still extremely tentative. In the present state of knowledge of local Neolithic wares, it is not possible to support the natural inference that the cave sites are earlier. Commodious caves in proximity to good agricultural areas are not very common, and any sizable population would soon be forced to build villages. Valmin's Neolithic I and II at Malthi has little or no stratigraphic basis and must still be checked against other local sites. The Malthi evidence for Neolithic pottery imported from the Boeotian-Thessalian orbit suggests a plausible source

Middle Helladic occupation (cf. pl. 73) shows a major increase over the preceding period. Many MH settlements are on sites where EH habitation is not documented. The heavier population would appear to reflect, to some extent, the advent of new people. The characteristic gray and yellow Minyan wares are relatively scarce, but this is probably due at least in part to the limitations of surface exploration. When local imitations of these wares are included, the list of habitation sites comprises: Ayios Andreas (#1), Vromoneri (#4), Olympia (#8), Pisa (#9), Ayios Elias (#14), Klidhi (#19), Kakovatos (#20), Ayios Demetrios (#21), Kyparissia (#22), Malthi (#27), Koutsouveri (#34), Kanalos (#37), Ano Englianios (#42), Voroulia (#45), Traganes (#52), Koukounara (#65), Gdhitis Rachi (#72), Kaphirio (#75), Nichoria (#76). Probable MH habitation sites include: Salmone (#5), Tourla (#10), Yerakovouni (#16), Tripiti (#18), Ayios Taxiarchos (#29), Karatsadhes (#32), Chalvatsou (#35), Ordhines (#37), Panayia (#54), Prophitis Elias (#59), Ayia Analipsis (#73), Kokkinochomata (#80), Kardhamili (#82), Leftro (#83).

Furthermore, a large number of artificial tumuli, occurring singly and in groups, can be associated with the type of early(?) MH multiple burial now well known from #50 (cf. pl. 75). The most certain parallels occur at Tsouka (#39), Kaldamou (#43), and Ayios Elias (#70); but likely or possible examples are located at Kanalos (#38), Kapoureika-Diakoupia (#44), Kretharetzes (#51), Chilia Choria (#68). A few of the mounds have associated habitation sites, but most do not. These MH tumuli seem to be confined to the Pylos region.¹² The Charatsari tomb (#57) serves as a warning that the

of limited trade and perhaps of ultimate origin of the Messenian Neolithic. Valmin's coarse "Adriatic ware," which in his mind represents a persistent local tradition extending all the way from Neolithic to Late Bronze, is a subject into which we shall not enter here. It is certainly true that much of the local coarse ware is very difficult material for typological analysis. Further careful excavation of well stratified sites may shed some light on this frustrating problem.

¹¹ The finest wares come from Klidhi (#19) and Ayios Demetrios (#21). Also noteworthy is the figurine from Ellinika (#78) illustrated in *Hope Simpson* pl. 50 (b). At Malthi-Dorion, the only excavated site, coarser wares predominate.

¹² Professor Marinatos, in a public lecture in Minneapolis, April 1960, referred to "at least 40" Messenian tumuli whose whereabouts he knows. The context of his remarks would indicate that the whole group predates the LH period, and he expressed the opinion that some may even prove to belong to EH. Cf. *Ergon* (1954) 43.

tholos type of burial may reach back into MH; and it is quite possible that some of the mounds which we have assigned to LH are really MH (and vice versa).

As for population distribution, there is now a clear concentration in the Alpheios valley, and an even more notable nucleus in the Pylos area. Scattered sites occur in the intermediate country, particularly at important coastal spots. So far the evidence suggests a lesser density in the Pamisos valley, and utilization of the eastern shore of the Messenian gulf was extremely scattered. Coastal and inland sites are about equal in number. In general, we are impressed by the regularity with which MH sites seem to have continued as major LH centers, as is now certain at Ano Englianos itself. Although stratigraphic evidence is extremely scarce as yet, there is some reason to assume a gradual and non-violent transition from MH to LH. The availability of land suitable for the intensive cultivation of grain and vines must have been the prime consideration in founding and perpetuating settlements all through the Middle and Late Bronze Age.

Population density reached a peak in the Late Bronze Age, especially in LH III B (cf. pls. 74, 75). We are sure of habitation sites, some of them with associated cemeteries, at the following places: Ayios Andreas (#1), Vromoneri (#4), Etia (#6), Drouva (#7), Ayios Elias (#14), Yerakovouni (#16), Koutsochira (#17), Klidhi (#19), Kakovatos (#20), Ayios Demetrios (#21), Kyparissia (#22), Mouriatadha (#22A), Styliari (#24), Malthi (#27), Krebeni (#31), Ordhines (#37), Kanalos (#38), Lagou (#40), Ano Englianos (#42), Voroulia (#45), Traganes (#52), Panayia (#54), Portes (#55), Beyler Bey (#56), Palaiochori (#58), Palaiokastro (#61), Vigla (#63), Kokkinia (#64), Koukounara (#65), Koube (#66), Platania (#67), Chilia Choria (#68), Ayia Analipsis (#73), Kaphirio (#75), Nichoria (#76), Kardhamili (#82), Leftro (#83), Svina (#84).

Probable or possible habitation sites, with or without associated cemeteries, include: Anemomilo (#2), Sodhiotissa (#3), Pisa (#9), Tourla (#10),

¹³ It seems to us very probable that a good many of these tombs were in reality associated with habitation sites already known or suspected, in the vicinity or even at some distance removed. In other cases evidence may turn up for habitation sites nearby. We believe, however, that some tholos tombs may have been located along much-travelled highways and at fair distances from any town, as for example in the Soulima plain and southeast of Ano Englianos.

Dardiza (#13), Tripiti (#18), Panayia (#25), Ayios Demetrios (#26), Ayios Taxiarchos (#29), Kokkala (#33), Koutsouveri (#34), Kastro (#35), Volimidhia (#41), Papoulia (#49), Gouvitses (#53), Viglitsa (#71), Gdithi Rachi (#72), Ayios Konstantinos (#77), Ellinika (#78). There are also a number of sites with LH tombs but no associated habitation sites yet identified.¹⁴ Ayios Georgios (#12), Kania (#15), Moira (#22B), Akourthi (#23), Xerovrisi (#28), Chasna (#30), Chourou (#42A), Koukouyera (#47), Routsi (#48), Kretathretses (#51), Charatsari (#57), Lezega (#65A), Tourkokivouro (#69), Charakopio (#74), Kalamata (#79), Kokkinochomata (#80), Kambos (#81).

The total number of certain LH sites, either habitation or tombs, or both, is 62. And there are 18 additional probable sites or cemeteries. This evidence underlines the accumulating proof that southwest Peloponnesus was near the top among the important areas of the Mycenaean world. As mentioned above, the distribution pattern follows fairly closely the MH model. There is a major concentration along the Alpheios in the north, and a still greater density in the Pylos area in the south. More scattered sites are spaced fairly evenly near, but usually not directly on the coast, both of the Ionian sea and the Messenian gulf. A strong line of penetration into the interior follows the valley of the "River of Kyparissia" or "River of Arkadha" in the center of our area, and reached up into the upper Stenyclerian plain, whence an easy route would have followed the Pamisos river down to the head of the gulf. The main east-west land communication, however, was from the Bay of Navarino via the Karpophora pass to Kalamata (Pherai) in the eastern plain.¹⁴

We will make no systematic effort here to differentiate among the sub-phases of the LH period. Indeed, surface exploration alone can hardly be expected to provide reliable evidence on such detailed questions. It is our definite impression, however, that a good number of the LH sites were newly founded or much enlarged in LH III, and particu-

¹⁴ We have been vigilant for evidence on contemporary land routes, and are now inclined to take quite seriously the implication in Homeric literature and in the Pylos tablets that Mycenaean roads were better planned and maintained than has usually been assumed. We intend to publish elsewhere our tentative evidence, particularly in connection with what we are calling the "Royal Road" connecting Pylos and Sparta.

larly in the subdivision labelled B.¹⁵ This strictly archaeological testimony strongly supports the literary tradition of a relatively short-lived but wide-ruling Neleid dynasty. Evidence is slight for LH III C, and also for the so-called sub-Mycenaean phase which followed. It would appear that our area was pretty thoroughly depopulated. On the other hand, it now begins to look as if there was considerable habitation in scattered spots, particularly in the south, during the protogeometric period.¹⁶

A second less clear-cut inference has to do with the large number of tholos or beehive tombs now known to cluster thickly in the Pylos area and to a lesser degree in some other sections. By and large, those which have been excavated had been built well before the beginning of LH III B. The natural assumption is that the district we have examined included a fair number of independent local kingdoms in the earlier phases of LH. But we see no archaeological evidence to cast doubt on the belief that these petty kingdoms were eventually unified under the Neleids. The local rulers, if cooperative, may well have retained most of their royal perquisites, including their palaces and family tombs.¹⁷

We firmly believe that Professor Blegen has discovered the administrative center of the unified

kingdom of Pylos which is celebrated in Homeric and later literature. Quite apart from the extensive palace ruins and archives, the concentration of population in the Pylos area is surely incontrovertible proof that here was the heartland of the whole southwest. It is true that in recent years more extensive surface exploration has been carried on in this section than elsewhere in the total area included in our survey. It may well be that other districts will eventually prove to have had greater population concentration than appears at present. But we submit that enough work has now been done to settle once and for all time the long-standing controversy over the situation of the Neleid capital. No other district which can conceivably have lain within the borders of a unified kingdom of Pylos will ever come near to matching the concentration of population, wealth and power of the district immediately north and east of the Bay of Navarino.¹⁸

We would like to be able to speak with equal confidence about the boundaries of the unified kingdom. But this is admittedly an open question and may long remain so. We are inclined to believe that the Alpheios formed the boundary on the north, and perhaps on the northeast.¹⁹ We think it quite

¹⁵ I.e. ca. 1340—ca. 1210 B.C., following Wace in *PAPS* 97 No. 4 (Sept. 1953) 424. Cf. Hope Simpson 220–23. Furumark's dating, ca. 1300–1230, scarcely allows time for the great quantity of LH III B pottery in the Mycenaean world.

¹⁶ LH III C pottery has been reported from tombs near Ano Englianos (cf. 42A) and Diascla (#17); SM at Ayios Andreas (#1) Nichoria (#76) and perhaps at Ayios Elias (#14) and Kokkinochomata (#80). When Desborough published his *Protogeometric Pottery* in 1952, the only PG material known in Messenia came from the latest burials in the tholos at Tragana (#46). We can now add the following sites: Ayios Andreas (#1), Palaiopyrgo (#5), the Ano Englianos area (#42A), Kaphirio (#75), Nichoria (#76); and probably Ellinika (#78), Kokkinochomata (#80) and Svina (#84). Careful excavation should some day solve the problem of whether Messenia was the scene of an unbroken local cultural development from LH into the early Iron Age. For a non-political explanation of the striking drop in population after LH III B, cf. Mistardis, G. G., "Effets de l'érosion sur le déclin de la civilisation Mycénien," *Comptes Rendus de la Réunion Technique d'Athènes*, Vol. I (1959) 85–89.

¹⁷ We now strongly doubt the validity of the time-honored equation: tholos tomb = royal tomb. Is there not a possibility that wealth rather than regal status came to be the main pre-requisite? And there must have been considerable wealth concentrated in other prominent families. Cf. Marinatos in *Ergon* (1959) 125. It seems to have been a common feature in Messenia, as Marinatos has pointed out, to build tholoi in pairs. We are also impressed with the fact that many Messenian tholoi were built on level or nearly level ground. Apparently other factors connected with their location took precedence over the availability of a slope, in which it would seem easier to con-

struct this type of tomb.

¹⁸ That the ghost of Dörpfeld's capital at Kakovatos has not yet been laid is underlined by E. Meyer's article (s. v. "Pylos") in *RE* Vol. 23:2 (1959) Cols. 2113–2161. Unfortunately this long and careful work is already badly out of date as it appears. Doubtless through no fault of the author, there was a delay of some eight years between the writing and publication. Consequently Meyer's argumentation predates the decipherment of the Pylos tablets as well as nearly all of Blegen's excavations at Ano Englianos and Marinatos' work in the surrounding area. A very brief Supplement (Cols. 2517–2520 in the same volume) hardly redresses the balance. This is not the place to undertake a detailed rebuttal of Meyer's position. By and large, he restates Dörpfeld's arguments which were based mainly on literary evidence (so *Philippson* 387). It is particularly disappointing to find the author using as a capital argument against the Ano Englianos site a rather peregrine discussion of its exact distance from the sea.

¹⁹ It would be possible in the present state of our knowledge to argue either for a relatively narrow coastal area in the north or to support the thesis that Pylian territory included part of southwest Arkadia. In harmony with the second assumption, one might cite a fair number of place names in the Pylos tablets which have later equivalents in the nearer part of Arkadia and also the fact that in the Homeric catalog no Arkadian centers are mentioned in the west and southwest. The Homeric evidence would suggest that boundaries in this area shifted rapidly as Pylian, Arkadian and Epeian fortunes waxed and waned. Cf. Sakellariou, M. B., "Ἐρα Πρόβλημα τῆς Ὄμηρικῆς Γεωγραφίας: τὰ δρια τῆς χώρας τῶν Ἐπειῶν," *Peloponnesiaka* 3 (1959) 17–46.

possible that at the height of Neleid power the east coast of the Messenian gulf may have been included, with the Taygetos range marking the southeast limit.²⁰

There are, indeed, some well-informed scholars who doubt that the kingdom with capital at Ano Englianos even controlled the upper west coast, up to and including the concentration south of the Alpheios. But there are even now no insurmountable gaps in the distribution of coastal sites between the Pylos district and the Alpheios region. Parts of this area, particularly toward the south, must always have been rather barren and unproductive (cf. *Philippson* 379, 385). But it is possible that closer search will somewhat fill in the area between Ordhines (#37) and Lepreon (#21).²¹ The occurrence of the toponym Kyparissia in the Homeric catalog and in the Pylos tablets, as well as the concentration of habitation along the river of Kyparissia, seems to insure the extension of the kingdom northward to that point. And the whole Homeric tradition, especially Nestor's "little Epic" in *Iliad* 11, indicates that Pylian power extended to the Alpheios, perhaps even including a coastal outpost at Pheia.

In startling contrast to the situation 20 years ago, southwest Peloponnese is now one of the more carefully explored areas of Mycenaean Greece. About 78 sites contemporary with the Englianos palace can reasonably be assumed to have been within Pylian territory or immediately contiguous. At least half of these same sites were inhabited in MH times. Nearly 80 towns may not sound so impressive when

²⁰ If one were to take Agamemnon's offer to Achilles (*Iliad* 9.149-53) of the Seven Cities "on the uttermost border of sandy Pylos" as reflecting the political situation contemporary with the greatest prosperity of the Neleid kingdom, the border would have been at least as far west as the Pamisos river. But the conclusions expressed in *Hope Simpson* 252-59 will have to be revised to a certain extent in the light of the new evidence from our joint field work.

²¹ For instance, we strongly suspect that there was a habitation site somewhere in the low hills around the little valley N-E of the Bouzi railroad station ca. 18 km. north of Kyparissia. Cf. *Philippson* 364. Cf. also Marinatos' latest discoveries (#22A, #22B).

²² The distribution of LH III sites shows clearly the importance of the sea in this period. One may suppose that there were major harbors at Ayios Andreas (#1), Kyparissia (#22), Palaiokastro (#61), Ayia Analipsis (#73), Karpophora (#76), Kalamata (#79), and Kardhamili (#82). Less certain candidates are Epitalion (#13), Klidhi (#19), Kakovatos (#20), Ordhines (#37), Kanalos (#38), Palaiochori (#58), Kaphirio (#75), Kambos (#81), Leftro (#83), and perhaps Methone (cf. Appendix, f). Overseas connections have recently been noted with Kephallenia (*Das Altertum* 1:3 [1955] 143) and possibly with

compared with perhaps 250 place names in the tablets. But at least a few of the latter appear to have lain outside Pylian territory. Also, a good many seem to represent rural districts which would have had no significant population center. Even in the case of many of the lesser villages, every vestige must have disappeared long ago.

Of course, more sites will be found within the area we tentatively assign to the Pylian kingdom. The interior is still quite inadequately covered. Although much of it is too rugged for serious consideration, there are some small but fairly good agricultural areas which the Mycenaeans may have utilized. We have noticed that LH sites are concentrated in areas where the soil is a fine-textured, loose, sandy, whitish marl (locally called "asprochoma"). This type of soil, ideal for grain and vines, is more common in and near the coastal plains. Also, it seems that isolation was more congenial to the MH than to the LH inhabitants of Messenia.

There can be little doubt that the major LH towns were usually near the coast.²³ And we believe that most of them have already been located. Perhaps the biggest geographical question-mark now is whether we have or will ever get the necessary evidence to connect the Bronze Age documentary material with the Bronze Age habitation sites.²⁴

Nothing said above should be taken to indicate that we consider that southwest Peloponnese has now been adequately explored. Professor Marinatos' latest important discoveries (cf. sites 22A, 22B) show that even the rugged interior must be sys-

Rhodes (Taylour, *Mycenaean Pottery in Italy* 178-80). The Pylos tablets seem to hint at close connections as far north as Aetolia. And there are strong indications in the Homeric *corpus* of a regular sea route, probably pre-dating the Iron Age, from Crete, up the west coast and into the Corinthian gulf. For further archaeological evidence, cf. *Antiquity* 34 (1960) 169-70, 176.

²³ Our Summary List of Sites includes evidence for habitation in the Iron Age, but it must in no sense be taken as a comprehensive guide to the occupation then. We have included in the list *only* sites which also show evidence of occupation in the preceding periods, which constitute our primary focus in this article. The detailed publication of our findings on the post-Bronze Age occupation pattern will be made elsewhere. Basically we notice a general tendency to locate population centers near, but not right on the coast in LH times, a "retreat" from the sea thereafter until the A or C period, a renewed partiality for coastal sites in C to R times, and another marked "retreat" in the Byzantine period. One would no doubt be generally correct in connecting this shifting pattern with contemporary political conditions of relative security and strong central authority versus exposure to piracy and marked lack of stability.

tematically searched. The time-tested archaeological methods will remain basic: thorough familiarity with the modern countryside and the present population and language; a firm grasp of what is already known about the ancient culture, especially its ceramics. But there are also promising new techniques which will surely bring greater precision and speed to field archaeology. Among the more important can be listed aerial photography, geological and physiographical reconnaissance, devices for detecting thermo-remanent magnetism, and electrical resistivity surveying. These techniques involve the team approach, since few archaeologists can be expected to have the necessary technical competence. And the required personnel and equipment will be

expensive. We need to know far more about coastal changes, alluvial deposits, erosion, earlier vegetation cover, water supply, soils and other factors bearing on the ancient habitation pattern. And on the more promising sites much can now be learned about what is under the ground before turning a single shovelful of dirt.

We fully realize that there is a considerable gulf between the ideal and the practicable. But cooperative effort can solve many problems and the results will more than justify the necessary organization and expense.²⁴

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Dyeing and Weaving Works at Isthmia¹

CHRYSOULA KARDARA

PLATES 79-82

The ancient ruins on the Rachi, the hill which overlooks the Isthmian sanctuary, reveal that the occupants had developed a small industry devoted to textile making.

In studying the material of this site I have come to realize that the vats could not have been wine presses, as was first conjectured.² Other remains of the Rachi were equally puzzling. This observation created some confusion: there seemed no adequate explanation of most of the remains on this hill.

A general survey of the ruins as they appeared in the course of their excavation and study is as follows. Scattered all over the excavated area of the hill are cisterns clearly intended for storing water. They occur in large numbers and in a variety of shapes and sizes. All are cut in rock and well cemented. There is also a well with steps and a side channel, cut in solid rock to a depth of 45 m. at least. The ambitious scale of these works suggests that the need for water on the Rachi was great. It looks as if most of the stored water of the cisterns was intended to be used in non-domestic activities.

Apart from these cisterns, the most peculiar remains on the Rachi are four small establishments, each consisting of a shallow rectangular tank, well cemented, and two circular vats (pl. 79; pl. 80, fig. 1). These vats, also well cemented, are side-by-side at one end of the tank. The bottom of the tank slopes slightly towards the vats. In one case the tank communicates with one of the two vats through a small channel; in another case a bath establishment forms part of the same unit. Small, more or less rectangular cisterns were found close to these

tanks. These, too, are cut in the rock, but are not for storing water; the term "container" has been applied to them conventionally. The débris of ashes, found either in the fill or in the area near by, gives the only clue to their function. In certain cases these "containers" seem to be supplemented by large jars.

The fill of these remains contained an amazing quantity of loom-weights, mostly of Corinthian manufacture, which would indicate that the purpose of the peculiar works on the Rachi was closely associated with weaving. Apart from the loom-weights and the ordinary vases, mostly fragmentary, the fill of the Rachi contained a large number of pieces of big terracotta roof tiles, also mostly fragmentary, a number of pieces of marble tiles, jugs, amphora fragments (including stamped handles), lamps, a few coins, several mill-stones and grinders, cooking pots, a few vessels of peculiar shape, and a number of pierced stones.

The big terracotta and marble tiles cannot belong to the roofs of the poorly constructed small houses on the hill. These tiles, some of which definitely antedate the settlement on the Rachi, seem to have been carried there when no longer used in their original buildings at Isthmia. They do not seem, however, to have been used as building material on the Rachi, at least in the majority of cases.³ It seems, therefore, as if they were used independently of one another, as implements of some kind.

Among the other conspicuous features of the hill are several staircases cut in the rock, some of which preserve several steps; one has a broad ramp. The hill seems to have been approached by these stair-

¹ I feel grateful to Professor Oscar Broneer for his kind permission to study the ancient ruins of the Rachi, as well as for reading, correcting, and discussing aspects of this paper with me. To Sir John Beazley I feel grateful for his generous help in matters of bibliography and for his criticism. To Professor W. F. Albright I am indebted for permission to illustrate pl. 80, fig. 2 (the dye-works at Debir). To Dr. Helene Kantor I am thankful for calling my attention to the dye-works at Tell Mor and to Dr. Moshe Dothan for his kind information regarding this site. To Messrs. Kraay, Jenkins, and De Ridder, I am indebted for their kind help regarding the Kypsela coins; and to Mr. Leonidas Zographos, chemical engineer, for technical advices and suggestions. I am also grateful to the British Council for the scholarship which enabled me to prepare this paper in

Oxford in 1959.

² The view that these people were weavers has been expressed by Professor Broneer in the preliminary reports of the Excavations at Isthmia, *Hesperia* 24 (1955) 124ff; *Hesperia* 27 (1958) 17ff. In these reports Professor Broneer expressed certain doubts that grapes grown in the valley could be carried to the top of the hill to be made into wine (*Hesperia* 24 [1955] 128). The view of wine making was based on the vats which were among the peculiar features of the Rachi. These vats resemble wine presses, and had to be explained one way or another in these reports. The writer—who was responsible for the excavation on the Rachi—agreed with Professor Broneer that the people of the Rachi were wine makers.

³ Cf. *Hesperia* 27 (1958) pl. 7 d.

cases, and also from the plateau on the west side. Prior to the settlement a small shrine stood on the highest point of the Rachi, at the spot which is now the western boundary of the excavated area. The settlement may have extended to the west. It may have comprised more water-works, tanks and vats, etc.; also stairways. But the part of the hill to the west of the small shrine is now completely cut away by ancient and modern quarrying. In spite of this alteration, the preserved staircases, which mark the hill on the north and south sides, suggest that the occupants were engaged in activities that attracted visitors from various parts of the Isthmus. The stairways give the impression that the people of the Rachi did their best to facilitate access to the hill, especially where it is rather steep.

The presence of several entrances to the settlement suggests commercial activities, and naturally the picture of a market place is brought to mind. But the ruins of the Rachi do not resemble any other market place in Greece. The lasting impression is that specific goods were once brought by various people to the Rachi, and perhaps sold there to the inhabitants of the hill; then, having been worked into suitable forms for use, were sold again to other people, or transported somewhere else to be sold. The loom-weights point to goods connected with the manufacture of textiles, wool, linen, etc.

If the settlement on the Rachi is explained as devoted to weaving, the only solution to the peculiar water constructions on this hill would be to associate them with dyeing. On the evidence of the ancient ruins at Debir (Tell Beit Mirsim)⁴ and the conclusions reached by Professor Albright regarding these ruins, we can now visualize the function of the ruins on the Rachi.

The ancient ruins at Debir present the following similarities to the ruins of the Rachi: 1) their fill contained large quantities of loom-weights; 2) they comprised several installations (pl. 80, fig. 2) which recall the tanks with vats of the Rachi; 3) near the vats the excavators found jars containing remains of a material which looked "like gray ashes"; 4)

near the dye-works a large number of pierced stones were found.

The installations with vats at Debir exhibit the following scheme. There is a rectangular area, one end of which is occupied by two vats. This area and the vats were immediately recognized by Professor Albright and his native workmen as ancient dye-works.

Professor Albright was able to illustrate how the dye-works at Debir operated in antiquity on the analogy of a modern dye-works at Hebron:⁵ slaked lime is first put into the two vats and is left to stand for two days. Decomposed potash is then added (these two materials help to fix the color). On the third day a small amount of dye is put into one of these vats, and twice as much of the same dye into the second vat. Then the yarn (or cloth) is given two baths: first in the first vat, then in the second vat. In order to obtain a better hue more baths are recommended. The pierced stones found at Debir are explained by the excavators as pressing weights; but no great stress is laid by them on this explanation. Indeed it leaves one point unexplained: why they were pierced? Similar stones were found on the Rachi. Apart from the hole, they are too small to be used for this purpose.

The dye-works of Debir and their modern counterparts at Hebron help us to understand the function of the installations on the Rachi. The two vats of the tanks on this hill seem to be basins where woollen yarn (or linen, perhaps) was dyed. The yarn was first soaked in alkaline water⁶ or in a kind of detergent.⁷ This process may have taken place on the platform, or in a jar. In one case it may have been done on a separate platform: a platform without vats was found next to a platform with two vats (pl. 79). Then the yarn was given successive baths in the two vats. When it was dyed, it was evidently laid on the platform again. Big tiles may have subsequently been laid on it to press the dye out for re-use. In one case the dye seems to have been collected into one of the two vats through a small channel. The dyed yarn was then rinsed and dried.

⁴ Albright in *AASOR* 21-2 (1934) 59-63; Albright, *The Archaeology of Palestine and the Bible* (New York 1933) 119ff; G. E. Wright, *Biblical Archaeology* (1957) 187ff; cf. also Albright, *The Archaeology of Palestine* 140, pl. 22 (Penguin Books, Harmondsworth 1949). Forbes (*History of Technology* I, 248) takes the dye-vats to be oil presses. The reason: they are not built to be heated. Albright, however, has made clear that dyeing at Debir was done by immersion. Forbes probably missed the earlier publications of Albright: he is willing to

accept the Palestinian vats as dye-vats provided immersion was the main operation in dyeing. He admits that Gezer was an important center of dyers in ancient times (cf. also Forbes in *Studies in Ancient Technology* IV, 139).

⁵ Albright, *The Archaeology of Palestine and the Bible* 120; Wright, *op.cit.* 187.

⁶ Cf. Strabo 13.4, 14, 630.

⁷ Cf. Forbes, *Studies in Ancient Technology* III, 180-81.

The view that the settlement on the Rachi was devoted to dyeing as well as to weaving offers the clue to the ambitious scale of the water-works. For dyeing much water is needed. The presence of bathtubs on the Rachi suggests that the occupants gave themselves a thorough and comfortable cleaning after work, a privilege working classes have attained in highly developed modern countries.

Apart from dyeing, the settlement may also have been devoted to fulling (*κνάφειν*). In Greek and Roman times basins, *πλυνοί* or *labra*, were used for treading cloth. Instances of such operations have been found at Pompeii,⁸ Chedworth,⁹ and elsewhere.

The settlement on the Rachi dates from ca. 360 to ca. 240 B.C. The settlement at Debir dates from the seventh century B.C. That immersion was practiced in seventh century Palestine and in Hellenistic Greece is not surprising, since this method is still used today in the Near East, and the native workmen were able to recognize immediately the installations at Debir as dye-works.

There are certain differences, however, between the dye-vats on the Rachi and those at Debir. On the Rachi the vats are cut out of the hillside, at the lower end of a sloping tank. These vats are open on top, have a narrow rim, and can be differentiated: vats communicating with the tank by means of a channel—evidently used mainly for expensive dyes, and vats not communicating with the tank—suitable mainly for inexpensive dyes. At Debir the vats are built of stone, are not connected with any tank, have a rather narrow mouth, and a broad, flat, rim. This rim has a circular channel provided with a hole in the bottom.

According to Professor Albright, the vats at Debir were used for expensive dyes, mainly purple. They seem to correspond to some extent to those vats on the Rachi which were connected with the tank by means of a channel: the circular channel with the hole in the bottom may have been used, as Professor Albright rightly suggested, for the splashed dye. It may also have been used, however, for the dye which was pressed out of the newly dyed yarn when this yarn was placed on the flat rim of the vat. This dye was collected again into the vat. The rims of the vats at Debir therefore seem to answer the requirements of small tanks.

In the spring of 1960 Dr. Moshe Dothan found

⁸ Blümner, *Technologie I*, 183ff, fig. 70; cf. also Forbes, *Studies in Ancient Technology IV*, 85, 141.

⁹ Chedworth Roman Villa (1934) 12ff (Baddeley). I owe this information to Mrs. Annie D. Ure.

new dye-works in Israel: at Tell Mor, near Ashdod (Azotos). According to Dr. Dothan's kind information—the section is not yet final¹⁰—these installations comprise cisterns, vats, and a deep well containing thousands of murex shells, all built of stone in a hollow cut out of the hillside. The cisterns are plastered, or have plastered walls and floors laid with shells. The vats are also plastered. One of the cisterns is connected with one of the vats by means of a channel.

The dye-works at Tell Mor are contemporary with those on the Rachi: they date from the Hellenistic period. So far no heating installations have been noticed at Tell Mor, and immersion seems to have been practiced in Hellenistic Palestine as well as in Hellenistic Greece. The plant dye on which the installations at Tell Mor are based seems to be different from that at Debir (Tell Beit Mirsim). The channel connecting one of the vats at Tell Mor with the cistern recalls the dye-works found on the Rachi (pl. 79); so does the well.

At Isthmia, as well as at Tell Mor, a stream flows nearby. The dye-works, however, including a number of cisterns and a well, were constructed on a hill. The reason is obvious: dyeing implies drying. Whether from the Saronic gulf or the Corinthian, the Greek mainland or the Peloponnesos, the Rachi is always exposed to winds, mild, strong, or even violent. These winds provided a quick service for drying dyed yarns.

The dye-vats on the Rachi show that immersion was the main operation for dyeing in ancient Greece. We know from ancient literature that the dyes used were: the kermes (*κόκκος*), the madder (*έρυθρόδανον*), the seaweed (*φύκος*), the woad (*ἰώτης*), the saffron (*κρόκος*), the black oak-apple (*κηκίς*), and other organic dyes.¹⁰ These dyes could have been used by the dyers of the Rachi. Apart from them, however, purple dyes may have also been in use on the Rachi. Among the movable finds of this hill the excavators found a few purple shells. Purple dye is also supposed to have been used at Debir and Tell Mor. If the dye-works of Isthmia are recognized not only as ordinary dye-works (*βαφεῖα*), but also as purple dye-works (*πορφυροβαφεῖα*), the question naturally arises why Isthmia was chosen for this industry. In 1879 Lortet and Chantre recorded the refuse of two

¹⁰ Preliminary report: *Bulletin of the Israel Exploration Society* 24 (1960) 120-32, pls. 9-12; cf. also *IEJ* 10, 2, 125.

¹⁰ Blümner, *op.cit.* 240ff.

purple factories (*πορφυρεῖα*), one in Attica, the other in Salamis.¹¹ Evidence of a third purple factory near the Isthmus is found in literature: Plutarch mentions that Hermione in the Argolid exported purple dye as far as Persia.¹² Laconia was known to have had another center which produced the best purple dye of Europe.¹³ In these factories the essential tissue was taken from the mollusk, the shells were then left on the beach.

The proximity of several purple factories to the Isthmus may have been of paramount importance. Isthmia, however, presents another advantage. The region of Parnassos, where great numbers of sheep were pastured, is not far away and could supply a large part of the wool supplies needed by the people of the Rachi. The close communication between the occupants of the hill and the dealers from the mainland, the Peloponnesos, or arriving by sea, is illustrated by the various staircases which give access to the hill. The Rachi as a site presents still another advantage: fuller's earth (*creta fullonica*, Pliny 17.46) can still be dug in large quantities on the north and south slopes.

Hermione was known for her exquisite purple dye, Corinth was known for the exquisite and exotic colors of her purple garments.¹⁴ Isthmia lies at a short distance from Corinth, the ancient reference to Corinthian garments may therefore be applied to garments manufactured on the Rachi.

Often the ancient references emphasize the shades of purple dye: black or dark blue, and red. We have references both in classic and oriental literature. A tablet from Ras-Shamra mentions quantities of wool dyed black-purple and red-violet.¹⁵ The Assyrians used the term *takiltu* for violet-blue and the term *argamannu* for crimson-red (*Fasti of Sargon II*, 142).¹⁶ We read of these colors in Biblical literature, too. In II Chron. 2:27 "purple crimson and blue fabrics" are mentioned; and a skilled dyer is praised. It has already been suggested that the Cretans and the Mycenaeans introduced these fabrics to the Near East; and that the Phoenicians became subsequently most skilled in dyeing them.¹⁷ The streets of Tyre were well-known for a bad smell coming from the purple shops, but the city largely owed its prosperity to this industry.¹⁸

¹¹ Perrot-Chipiez III, 881.

¹² Vit. Alex. 36.

¹³ Pliny, *Nat.Hist.* 9.127.

¹⁴ Forbes, *Studies in Ancient Technology* IV, 140; cf. also RE s.v. Schnecke Καλαστέας Κορινθιοντρύεις εἰσὶ δὲ αἱ μὲν πορφύραι τούτων, αἱ δὲ λοβαφεῖς, αἱ δὲ ὑακίνθιναι· λάβοι δὲ ἄρ-

The art of obtaining the two main colors, and various hues between them, was a carefully kept secret of the ancient dyers. There seem to be two main types of purple mollusks: 1) the purple mollusk (*πορφύρα*): the tissue of this mollusk produces a white fluid which turns to yellow, then purple (through oxidation); 2) the murex (*κήρυξ*): the tissue of this mollusk changes to deep violet (photo-chemically). There is also another variety of mollusk the tissue of which produces scarlet red.

The excellence of the quality of the dye largely depended on the maceration of the mollusk and on the extraction of the dye tissue. The various hues were probably obtained by varying the dose, by breaking off the process, by both, or by mixing dyes of various mollusks. Solvents may have been used to obtain a desired hue, or to produce a fast color. They may also have been used for the extraction of various dyes—purple and non-purple. They may be the φάρμακα we hear of. The place in which the various dye hues were prepared in an ancient dye-works was called φαρμακών. It is possible to recognize such a place among the ruins of the Rachi.

According to Plutarch, the purple dye of Hermione, although stored for almost 200 years before Alexander's conquest of Persia, was very fresh.¹⁹ Plutarch gives the reason of this extraordinary preservation: the red color of this dye had been mixed with honey. Honey acts as a preservative of organic materials. That honey played a role in the preservation of purple dye can now be illustrated by an archaeological find. Among the movable finds of the Rachi is a vessel (pl. 81, fig. 6) which shows the following features: a cylindrical form, two handles, groups of vertical grooves on the inside (made before firing with a comb), a slit near the bottom (also made before firing), a name scratched on the outside (ΟΡΕΣΤΑΔΑ), and no sign of fire on the bottom. Mr. Pallas has identified this vessel as a beehive for the following reason. He found in the Justinian fortress several vessels having 1) a name scratched outside, and 2) groups of vertical grooves inside, on one side only, and identified them as beehives. To be sure, the Rachi specimen differs in shape and in fabric from those of the fortress; the beehive of the Rachi is of Corinthian fabric, the

τις καὶ φλογίνας καὶ θαλασσοειδεῖς. Demokr. Ephes. ἐν τῷ προτέρῳ περὶ τοῦ ἐν Εφέσῳ ναοῦ. FHG IV 383.

¹⁵ Syria 15 (1934) 141ff.

¹⁶ ibid. 141.

¹⁷ Lorimer, *Homer and the Monuments* 63 and 397.

¹⁸ Strabo 16.2.23. ¹⁹ Cf. note 12.

others are not. The Rachi beehive presumably had a lid. The others were closed on top. The scratched name (ΟΡΕΣΤΑΔΑ) was probably the name of the owner or of the maker; and may have been used as a trade-mark. The slit served as the entrance for the bees. The grooves inside helped the bees to fix their wax-cells on the walls of the beehive. Several fragments of similar beehives have been found among the movable finds of the Rachi. This type of beehive presents a considerable advantage: if the bees are crowded, more room can be provided through the addition of a bottomless cylindrical stem. The lid in this case would be set on top of this stem.

The Rachi beehive brings us to the story of Kypselos, the tyrant of Corinth: the Delphic oracle once predicted that the son of Labda (who was a Bacchiad but was not married to a Bacchiad) would rule over Corinth. The Bacchiads sent men to kill the baby, but failed, because Labda hid her son in a beehive. It is possible that the beehive in which Kypselos was supposed to have been hidden was thought of as a cylindrical one: something not far removed from the Rachi beehive. That beehives were made of clay is inferred in Aristophanes' *Peace* (631). Homeric beehives are called *κρητῆρες* and *ἀμφιφορῆς* (*Odys.* v 105). These two terms imply the presence of handles. Clearly the form of the Rachi beehive is reproduced on the coins of Kypselos (pl. 81, figs. 3-5). The vessel on these coins²⁰ has already been recognized by scholars as a beehive. The lower part of the vessel on these coins varies. It may be that Corinthian beehives had a flat bottom and rested on some kind of stand, natural (such as a slab) or artificial. One cannot here go into the details of the form of the larnax of Kypselos: the larnax which was dedicated at Olympia by the Kypselids. According to Pausanias, the Corinthians called the larnakes beehives. Klein suggested that the larnax in Olympia had heraldic significance, was the symbol of the family of the Kypselids, and became the starting point of the legend of this family.²¹ P. N. Ure suggested that Kypselos may possibly have adopted a kypsele as his emblem, or may have inherited it from the founder of a potter's factory,

and this might have been the immediate origin of his name.²² Emblems as family²³ badges were widely spread in early Greece.²⁴

Among the other movable finds of the Rachi we mention: 1) Bowls with a spout. All sorts of liquids may have been poured from them (pl. 82, fig. 14).

2) Various cooking pots. We have: (a) shallow cooking pots (pl. 82, figs. 9-10). They may be thought of as ancient capsae; evaporation of various solutions may have been obtained from them. (b) deep cooking pots (pl. 82, figs. 11-13) used for various purposes. Some are provided with strainer spouts (pl. 82, fig. 11). In these a liquid was probably prepared (from cooking some organic dye material—for instance, ground oak-apples may have been cooked there, the liquid then strained, the solid bits left inside).

3) Millstones. They were used for grinding various materials used in the process of dyeing.

4) Narrow-necked jugs and juglets. Some of them are of non-Corinthian manufacture. They may have contained certain imported dyes (pl. 81, fig. 7).

5) A large vessel of a very peculiar form (pl. 81, fig. 8).²⁵ It bears no sign of fire on the bottom and cannot be a cooking pot. It is divided into two compartments: one slightly higher, circular, with flaring rim, and rather small; the other larger, elongated, and with vertical rim. The two compartments communicate through a large opening.

The division into two compartments, one larger than the other, suggests that some sort of liquid passed from the smaller to the larger compartment of this vessel. The flaring rim of the circular compartment, and the opening, point to extraction. The impression one gets from this vessel is that a dye-material, or the like, was put into the small circular compartment. Some kind of solvent was then poured on this material. The solvent may have been poured directly, or through a funnel-like container set on the flaring rim (funnels are traditionally used for extraction, and are still in use). The inside of the vessel has a dark thick deposit on the bottom—the remains of the extracted dye? According to the chemical analysis, this deposit consists of 1) organic matter, 2) silica. Silica colloid, found in all earthenware,

²⁰ Imhoof-Blumer in *AbhBayer* 18, pl. 6; cf. also P. N. Ure, *The Origin of Tyranny* 200.

²¹ Klein, "Zur Geschichte der Kypseliden," *SbAkWien* 8 (1884).

²² P. N. Ure, *The Origin of Tyranny* 208.

²³ Furtwängler (*Meisterwerke der griechischen Plastik* 723-32) thought that the story was devised by the Olympian guides

who wanted to explain a magnificent offering about which they knew nothing.

²⁴ Sittl (*Parerga zur alten Kunsts geschichte*, Würzburg 1893, 24) and Studniczka (*Jdl* 9 [1894] 52, note 16) suggested that the chest of Kypselos was cylindrical; so did P. N. Ure (*op.cit.* 207).

²⁵ *Hesperia* 27 (1958) 32 (IP 520) pl. 17 g.

easily absorbs other liquids, especially dyes. The silica of this deposit might be the silica contained in the clay of the vessel itself. The organic matter might be the real remains of the ancient dye, since ancient dyes were organic. The dark deposit is thicker on the bottom of the small compartment. If the vessel was made for extraction, one would expect to find a thicker deposit on the bottom of the compartment where the dye-material was placed, i.e. in the small compartment.

According to Professor Broneer, the peculiar vessel of the Rachi is probably a baby's toilet of unique shape. There seems to be something in this view, too. Urine helps to dissolve acid dyes. It was used by ancient dyers as a detergent, and also to get proper dye-hues. Urine mixed with lime provides ammonia. Ammonia is a strong detergent, also a fixative, and in distant parts of Greece urine (of a baby) is still used as a detergent and a fixative.

Some of the "containers," i.e. the cisterns near the dye-vats, were found full of a material which looked like gray ashes. We have already seen that a similar material was found near the dye-vats at Debir. The ancient dyers probably used fuller's ashes. According to the ancient sources, natron was used²⁶ either as fixative or detergent. Scholars have pointed out the false identification of the ancient natron (sodium carbonate Na_2CO_3) with nitre (sodium nitrate $NaNO_3$).²⁷ Egypt seems to have possessed several centers of sodium carbonate in antiquity, and these centers were monopolized by the state in Ptolemaic times.²⁸ Whether the Greek dyers employed Egyptian sodium carbonate is doubtful. Sodium carbonate, however, could be obtained from other sources, for instance efflorescences. Sodium carbonate could also be obtained from the combustion of plants. The ashes of these plants contain alkali, and alkali acts both as a degreaser and as a

fixative. In one of the "containers" of the Rachi calcined stones were found. Like ashes, lime may have played a role in the process of dyeing. To suggest, however, that ancient lime survived through the centuries in this "container" may be quite misleading.

It is not surprising that dye-works were combined with weaving-works. Ancient sources speak of such instances. The subject will be treated in detail in the final publication of the site.

One naturally thinks of the Rachi works as a temple industry where the sacred garments of the gods and goddesses, as well as those of the priests and priestesses, could be manufactured. The settlement on the Rachi, however, is only partly preserved. The dye- and weaving-works seem to have occupied a much larger area. The lasting impression is that the industry on this hill was on a large scale. It is possible that a guild of dyers was given a lease, perhaps by the sanctuary. We do not know what caused the end of this flourishing industry, and the site seems to have been abandoned rather than destroyed. The few calcined stones found in one "container" cannot be taken as evidence of a violent catastrophe; neither can the presence of ashes (fuller's ashes). There are several possibilities which may explain the end of the industry: a disagreement between temple officials and the heads of the guild as to rental and other taxes; a decision of the temple officials to beautify the area by removing the dye-works from the hill; a decree monopolizing the dyeing industry in the district; the establishment of a rival center somewhere else in the neighborhood; the introduction of indigo (*ινδικὸν χρῶμα*) from the East, and the construction of vats built to be heated.²⁹

ATHENS

²⁶ Blümner, *op.cit.* I, 175, note 1.

²⁷ Forbes, *Studies in Ancient Technology* IV.

²⁸ Forbes, *History of Technology* I, 261; *Studies in Ancient*

Technology III, 174.

²⁹ Forbes, *Studies in Ancient Technology* IV, 134.

The Cape Gelidonya Wreck: Preliminary Report*

GEORGE F. BASS

PLATES 83-90

Just off Cape Gelidonya, in southwest Turkey, is a row of five tiny islands, the Beş Adalar group (pl. 83, fig. 1). The current which runs around the cape and between these islands is especially treacherous, being not only quite strong, but reversing its direction in a single day for no apparent reason.¹ The rocks in the area are jagged and some are hidden just beneath the waves; on the whole, it is a likely spot for the wreck of a ship sailing along the southern Anatolian coast. That the cape lay in a shipping route for copper and bronze traders in the Late Bronze Age might have been suggested by the discovery, about 1913, of two bronze ingots in the neighboring Bay of Antalya.²

During 1958 and 1959, Mr. Peter Throckmorton spent the summer months searching for ancient

wrecks along the Carian and Lycian coasts, using as his main source of information the sponge-divers of Bodrum, the sponge center of Turkey. While diving with these men, Throckmorton heard of a wreck full of copper, and was later able to direct the Cochran expedition to the site at Cape Gelidonya.³ There the ship lay between the two islands closest to the mainland; it had probably broken on the north edge of the more southern of these, perhaps at night or in a storm (pl. 83, fig. 2). The narrow passage between the two islands may have been chosen to avoid the stronger current that runs around the cape.

In the spring and summer of 1960, the University Museum of the University of Pennsylvania sent an expedition to excavate the remains of this ship.⁴ The location of our camp was dictated by the nearest

* This report is a slightly expanded version of the paper I delivered at the 62nd General Meeting of the AIA in Hartford, Conn., and which was later read, with a few changes, by Miss Joan du Plat Taylor in England. For more popular accounts of the work, see G. F. Bass, "A Bronze Age Shipwreck," *Expedition*, *The Bulletin of the University Museum of the University of Pennsylvania* 3 (Winter 1961) no. 2, 2-11, and an article by Peter Throckmorton which will appear later this year in *National Geographic*.

¹ A more detailed description of the islands and current may be found in *Sailing Directions for the Mediterranean* IV (U.S. Hydrographic Office Publication 154 A; Washington, D.C., 1951) 174.

² Stefan Przeworski, "Die Metallindustrie Anatoliens in der Zeit von 1500-700 vor Chr.," *Internationales Archiv für Ethnographie* 36, suppl. (Leiden 1939) 92, with pl. 13, fig. 2; C. T. Seltman, *Athens, its History and Coinage before the Persian Invasion* (Cambridge 1924) 3, n. 3.

³ Peter Throckmorton, "Thirty-three Centuries Under the Sea," *National Geographic* 117 (1960) 682-703; Stanton A. Waterman, "Three Thousand Years Under the Sea," *Explorers Journal* 38 (1960) no. 3, 28-35; Machteld J. Mellink, "Archaeology in Asia Minor," *AJA* 63 (1959) 73, *AJA* 64 (1960) 58; Honor Frost, "Two Carian Wrecks," *Antiquity* 34 (1960) 216-18; J. M. Cook, "Greek Archaeology in Asia Minor," *Archaeological Reports for 1959-60 (JHS Suppl.)* 28-29; C. Picard, "Découvertes sous-marines de l'âge du Bronze au Sud de la côte d'Anatolie," *RA* 2 (1960) 88-91, with figs. 2-3; George M. A. Hanfmann, "Roebuck, Ionian Trade and Colonization," *Gnomon* 32 (1960) 701. I wish to thank Mr. Throckmorton and Arthur Steinberg, respectively, for these last two references.

⁴ The excavation was sponsored by the University Museum, aided by the Littauer Foundation, Mr. John Huston of the Coun-

cil of Underwater Archaeology, the American Philosophical Society, and two individual contributors. The preservation and recording of finds was undertaken by the Institute of Archaeology of London University, with funds from the British Academy and the Craven Fund. Our diving equipment was acquired through the generosity of the U.S. Divers Company in America, and La Spirotechnique in France. The British School in Athens also lent all of its diving equipment to us, but, unfortunately, this did not reach us during the season because of customs difficulties. Our high-pressure air compressor was made available to us at a greatly reduced price by Bauer Kompressoren of Munich. Photography was made possible by loans of the latest underwater camera by the Nikon Company of New York, and of a Polaroid Land Camera with film by the Polaroid Corporation of Cambridge, Mass. An underwater case for the Polaroid camera was designed and constructed by the French Navy's Undersea Research Group (O.F.R.S.). Special polythene bags, for preserving perishable finds, were supplied by Anglo-American Plastics, Ltd. of London, and Araldite for treating wood was a gift of CIBA (A.R.L.) of Cambridge, England. For preserving cloth, we were given a supply of Gelvatol 1-30 by the Shawinigan Resins Corporation of Springfield, Mass., but our cloth proved to be a mirage this season. For various illnesses and poisonous fish stings we had drugs from the Wellcome Foundation Ltd. of London, and anti-histamine creams from Scientific Pharmaceuticals Ltd. of Cambridge. Our fine, large dinghy was lent by Baskin Sokullu of the Turk Balik Adamlar Kulubu. The underwater metal detector which we used during the last few days of the season was brought by Luis Marden of the *National Geographic* staff.

The staff consisted of G. F. Bass, director; Peter Throckmorton, technical advisor and photographer; Joan du Plat Taylor, in charge of preservation and records; Frederic Dumas, chief

supply of fresh water, combined with a suitable anchorage for our diving boats. This combination was found in a small, cliff-enclosed cove about an hour's sail from the wreck. Here, on a beach about 25 feet wide, we were able to set up an adequate camp with living quarters, kitchen, dark room, and areas for drafting, repairing machinery, and filling air tanks. Most important, we dammed up a small spring, making a large, fresh-water basin in which to soak the finds after they had been raised from the salty Mediterranean.

METHOD OF EXCAVATION⁵

We worked from two Bodrum boats: the *Mandalinci*, a 30-foot long sponge-diving boat, captained by Kemal Aras, the discoverer of the wreck, and the *Lutfi Gelil* (pl. 83, fig. 2), somewhat larger and not a diving boat, captained by Nazif Goymen. A dinghy with an outboard motor was also with us as a safety measure, to pick up divers who might be swept away by the current; fortunately, it was never necessary to use it for that purpose. Each morning we sailed out to the site, where we moored to a permanent oil-drum buoy anchored directly over the wreck. A descending-line, tied to a rock within the excavation area, allowed us to swim down to the wreck quickly and always showed the shortest route to the diving boat in case of an emergency on the bottom. We dived, normally, in groups of two or three; the area of the wreck was too small to accommodate more conveniently. Diving equipment included Aqua-lungs, glass face-masks for clear visibility, rubber suits for warmth, foot-fins for propulsion, belts with lead weights for ballast, and knives with serrated edges to cut through entangling seaweed or lines. Additional equipment included

diver; Claude Duthuit and Waldemar Illing, divers; Herb Greer, underwater photographer; Honor Frost, Eric J. Ryan, and Yuksel Eğdemir, underwater draftsmen; Terry Ball, object draftsman; Peter Dorrell, object photographer; and Ann Bass, in charge of cleaning and cataloguing during the last third of the season. Hakkı Gültekin and Lütfi Tuğrul represented the Turkish Antiquities Department, and were a constant source of aid and advice. All of the above, with the exceptions of Miss Taylor, Ball, Dorrell, and Tuğrul, worked on the wreck underwater. Visitors who also dived and worked on the wreck were Mustafa Kapkin, Rasim Diwanli, Roland J. Lacroix, Gernolf Martens, and Luis Marden. At the conclusion of the season, Gottfried Gruben came to Bodrum in order to draw the only preserved section of the hull, as it was being disassembled. John Dereki, captain of *Haji Baba* of Beirut, visited us for a day and took a series of depth readings with his electronic sounding devices. Miss Susan Womer has assisted in the preparation of some of the drawings for publication.

The formation of such a novel excavation, involving divers

depth gauges, which were not needed after the various depths on the wreck were known, underwater compasses, and underwater watches. The watches allowed divers to time their dives, although one member of the expedition kept a constant check on the surface and signaled the ends of dives by hitting two pieces of metal together just under the water. It was essential to keep a log of diving times for each excavator. Underwater, the blood absorbs pressurized nitrogen, the amount depending on the depth and duration of each dive. If a diver absorbs too much nitrogen and rises too quickly, this gas will come out of solution, causing crippling and often fatal bubbles in the bloodstream. To prevent this divers' disease, familiarly known as the "bends," it is necessary to allow the nitrogen to leave the body before the diver rises to the surface. Tables give fairly reliable rates of ascent for dives of varying length at each depth. At Gelidonya, each excavator was able to dive for forty minutes in the morning and twenty-eight minutes in the afternoon, allowing at least three hours between dives. Each dive was concluded with a six-minute decompression period on the descending line, just three meters below the surface.⁶ The difficulties of an excavation where each excavator can visit the site for only an hour and eight minutes a day may be imagined; on deeper wrecks, the time would be much less. Another difficulty was the current, which normally presented no problem. At times, however, we dived with air hoses rather than with compressed-air tanks, and the drag on these hoses was considerable. It was possible to descend and ascend only by climbing the descending line, and movement on the wreck was limited. Furthermore, kinks in the hoses

and equipment from five countries, took an unusual amount of paperwork. That Mr. Throckmorton's work was continued on a large scale was due especially to the foresight and planning of Mr. John Huston of the Council of Underwater Archaeology in America, and Miss Taylor in England. In Turkey, we were grateful for the technical advice given by Mr. Daniel Siglin and Mr. Kenneth Sprague. My excellent course in diving was under the instruction of David Stith, of the Philadelphia Depth Chargers, who is now training several other archaeologists to dive. A special word of thanks must go to Dr. Rodney S. Young, whose guiding hand from beginning to end made the entire project a success.

⁵ G. F. Bass and Peter Throckmorton, "Excavating a Bronze Age Shipwreck," *Archaeology* 14 (1960) no. 2, deals almost exclusively with our methods.

⁶ These decompression times are longer than the tables require. The only cure for the "bends" is immediate recompression in a special chamber, but, because of various difficulties, our recompression chamber never reached Gelidonya.

occasionally cut off air on the bottom, forcing two divers to share one mouthpiece.

When work began, divers photographed (pl. 84, fig. 9) and mapped the area. An "aerial survey" of the wreck was taken by a photographer using an absolutely level camera and swimming at a fixed distance over the bottom; a level and a plumb line were attached to the camera to make this possible. Two-meter measuring rods in each picture allowed the photographs to be printed at a uniform size before being cut up and glued together. The photographic records served only as a check on the drawn plans. For these plans, small groups of objects were drawn on translucent plastic sheets with ordinary pencils (pl. 86, fig. 14). Measurements for the overall plan were made from spikes driven into the surrounding rock bottom, but no more than thirty or thirty-five points could be accurately triangulated in a single dive (pl. 83, fig. 3). For any future wrecks, we plan to use a metal frame equipped with calibrated sliding members, which will allow a single diver to note coordinates and levels quickly and accurately.⁷

Little of the wreck was visible on the bottom, most of it being completely covered by lime deposits which were sometimes several inches thick and always extremely hard. It would have proved unduly time-consuming to cut away this concretion underwater; thus it was decided to raise the remains in large, concreted lumps, which were cut loose with hammer and chisel (pl. 83, fig. 4). Sometimes an automobile jack was used to free large pieces, but only after a breaking line had been cut deeply with a chisel (pl. 86, fig. 16). On no occasion were objects damaged by what might seem an unusually rough technique. Once free, the lumps were raised to the surface with a cable running from a winch on the *Lutfi Gelil* (pl. 83, fig. 5). On one occasion, as may be seen, it was necessary to wrap the lump in a sheet to prevent fragile material on its underside from being damaged by the current. On another occasion, wood was noticed under a lump weighing several hundred pounds. If the *Lutfi Gelil* had rolled or pitched while raising this piece, the heavy mass would easily have crushed the wood below. To prevent this, two large plastic balloons were attached to the concretion and were then inflated from the diver's air hose (pl. 83, fig. 6). The lifting force was perfectly controlled and the piece floated gently to the surface. Such lumps, which had been plotted

on the bottom before being raised, were carried back to the camp, where they were joined together and cleaned in place. The results showed the arrangement of the cargo exactly as it had been on the seabed (pl. 84, figs. 7 and 8). The cleaned groups were drawn on land and, by matching points plotted on the bottom, were added to the overall plan. Single objects were simply marked with plastic tags and, after having been photographed and drawn, were lifted in a steel-wire basket.

In order to locate small, single pieces, divers often cleared sand from the wreck by hand and raised it in buckets. For areas around the wreck, however, we used an air lift, a large flexible tube to whose lower end air is pumped through a hose. The air, rising upward through the tube as it seeks the surface, creates a suction, acting on sand and mud much as would a vacuum cleaner. Two air lifts were used. The larger, about six inches in diameter, carried the sand only forty-five feet away, where it was caught in a bag tied to the upper end of the tube. The smaller was only three inches in diameter, but 100 feet in length, which allowed it to carry the sand to the deck of the *Lutfi Gelil*, where it was dried and sifted. The air lifts were seldom used directly on the sand, for fear of sucking up and breaking a fragile object. Instead, one diver held the tube while another fanned sand gently toward its mouth (pl. 86, fig. 15). Another tool for searching under sand and concretion was an underwater metal detector. This located several hidden deposits which might otherwise have been missed, and assured us that no metal was overlooked. Still another searching device, a core sampler, would have been of no use at Cape Gelidonya because the bottom was covered by only a thin layer of sand. Later during the season, however, we took a sample of the mud near a Byzantine wreck at Yassi Ada, where we plan to work in the 1961 season. Taking core samples may prove of some use in finding the various parts of a hull before air lifting begins, but it is a very slow process.

THE SHIP

The natural contours of the seabed broke the wreck into easily defined areas, which were labeled accordingly (pl. 85, fig. 10). Area G was the Gulley between a large, fallen Boulder (B) and the base of the cliff which ran up to form the rocky edge of the island. Just west of G and B was a flat,

⁷ G. F. Bass and Peter Throckmorton, *op.cit.* (supra, n. 5).

Sandy area (S), which separated the Gulley from a rocky Platform (P), about a meter higher than S. When several objects were discovered still further west, this new area became E, for Extension, and objects scattered by the current over a large area to the north of all previously named areas were simply from M, or Miscellaneous. There was no need, on this wreck, for a grid system.⁸ Most of the wreck lay in 26 to 28 meters of water; depths below sea level are given on the plan, but detailed sections remain to be checked next season. Although some of the cargo was scattered, the ship seems to have settled between the large sponge, at the west, and the triangular rock, pierced by a round hole, at the east. The rock was natural and was not, as first appeared, a form of early anchor. The positions of the largest pieces of cargo, copper ingots, are shown on this plan, but smaller objects usually lay under these or under rocks (note arrows) and are represented only by their inventory numbers.⁹ Several of these copper ingots are represented by broken lines. These had been removed during the summer the ship was discovered and had been placed in Bodrum. Their impressions were still clear, however, in the concretion from which they had been pulled. Indeed, these impressions show far more clearly on the montage than do the actual ingots, which were mostly covered by sea growths and lime deposits.

Little was preserved of the structure of the ship, for the seabottom onto which it sank was rock covered by only a few centimeters of sand. With no protective coating of mud, most of the hull had disappeared. Tiny fragments of wood turned up in area P, but little could be made of them, and none seemed to be part of the hull. From G into part of S, however, traces of planks could be followed under the lumps raised from the southern edge of these areas. These planks were in a fragmentary state, badly broken on the rocks, but most of them ran in an approximate east-west direction, pressed hard against the base of the cliff. They were 10 to 15

⁸ The plan was drawn by C. K. Williams with measurements taken by the author, assisted by Duthuit and Eğdemir; positions of small objects were added from Miss Frost's working plans. It should be noted that on this plan, and on the photographic montage, north is at the bottom; this was for the convenience of divers, who sometimes took tracings to the bottom and who normally approached and studied the wreck from the open north side.

⁹ On a plan of this scale it was impossible to show exact positions of small objects. Also, to prevent confusion, most of the wood, which was in several layers, and many of the inventory numbers are not shown here in area G because of the very

mm. thick and from 5 to 15 cm. wide; none was preserved to any great length. Neatly cut dowel holes, 1.5 to 2 cm. in diameter, were found in several planks, and the actual dowels were in place in a few instances (pl. 84, fig. 11). The area containing most of the preserved wood was raised in one piece, after we had spent three weeks cutting under the rock to which it was attached. Before being moved, each piece of wood was pinned with a numbered plastic tag in order to allow underwater and land records to be accurately matched (pl. 86, fig. 12). The photograph was taken from the north, and shows in its center the ingot handle which lies in the midst of the wood of area G on the plan. Several plank ends protrude below and to the east of this handle. Running parallel to the planks was a much larger piece (just west of ingot 437 in area G, seen barely protruding from the sand in the upper left of the photograph). Until a more thorough study of several hundred photographs and drawings of this area is made, it would be premature to speculate whether this was part of a gunwale; there is some evidence to indicate that the ship had tipped part way over in the Gulley, putting this large piece in the position of the keel. Over the planks, and perpendicular to them, lay a large pile of sticks. They varied in size, but none were probably ever more than a meter long; their ends were often preserved, cut diagonally across as if by an axe. Bark and twigs remained on most of them. Their purpose remains uncertain, but Gottfried Gruben, who drew each stage of the disassembly of this lump on land, noted that they might have served to protect the hull against the heavy metal cargo; they surely had nothing to do with the construction of the ship. His restorations (pl. 86, fig. 13)¹⁰ also show a transverse plank with three dowel holes.¹¹ All traces of ribs have disappeared, but have been restored tentatively in two possible fashions.

It should be noted how well our ship fits the description of the small boat (not, it would seem, a raft) built by Odysseus with the aid of Calypso.¹²

crowded conditions. The ingot and three ingot halves in area M were not *in situ* when the plan was made, having been moved, probably from area P, by the discoverers of the wreck.

¹⁰ Drawings by Maude de Schauensee from sketches in a letter from Herr Gruben.

¹¹ This transverse plank, which may have had five dowel holes, was actually found under some of the side planks of the hull. Ballast stones and pieces of copper were found with it, however, showing the badly twisted state of the hull; we have assumed that it must be restored within the ship.

¹² *Odyssey*, 5.233-261.

We have planks with bored holes and dowels, and at least two of our planks were jointed together at their ends. On board, perhaps only as part of the cargo, were also the main tools used by Odysseus: axes and adzes. One part of this passage had previously presented difficulties in translation:

φράξε δέ μιν ρίπεσσι διαμπερὲς οἰστῆνησι
κύματος ἐλλαρ ἔμεν· πολλὴν δέπεχενάτο ὑλην.¹³

The ὑλη has often been considered part of the wattle fencing against the waves, or at least a backing for it, and has even been called ballast. It now seems that a literal translation is required, for brushwood may have been a normal covering for the interior of a hull.¹⁴ The pile of sticks on the Gelidonya wreck was almost certainly not part of the wattle fence, for cargo was lying on it; even if the cargo fell on the sticks during the tipping of the ship in area G, there is no evidence that the sticks were woven or attached to each other in any way.¹⁵ There remains the possibility that this was only firewood, for in this area were found traces of a meal: olive pits and bones of fish and, possibly, a bird. (An *astragalos* from the same area was probably only for playing knucklebones, for no other large animal bones were found.)

The length of the ship may not have been much more than 8 or 9 meters, judging from the distribution of the heavy cargo, which lay more or less *in situ*. This size compares well with that of the *Mandalinci*, which is quite at home following the coasts of the Mediterranean. The width is harder to esti-

mate. The portion of the cargo preserved *in situ* in area P is 1.6 meters wide, but this gives only the minimum breadth for one end of the ship, and no indication of the beam. These minimum dimensions give us a ship quite capable of carrying the cargo, which weighed approximately one thousand kilograms; in addition, there were 116 kg. of ballast stones, similar to, but individually larger than, those used on our diving boats.

THE CARGO

The ship carried a wide variety of goods. The pottery awaits a final cleaning and mending, after which most pieces must be redrawn and photographed; pottery was especially hard to remove from the concretion, as the deposits had soaked into the pores of the fabric. Several distinctive pieces, however, including stirrup jars, a base-ring jug, and large storage jars, are best placed in the 13th century, B.C.; several of these tend to be late in that century. As Aegean parallels have not yet been thoroughly explored, it would be misleading to present here only the comparisons found from Cyprus, Syria, Palestine, and Tarsus.¹⁶

The greater part of the cargo consisted of copper ingots. Forty of these, including ten of which only half is preserved, are of the so-called "ox-hide" shape.¹⁷ These averaged in length and width 60 by 45 cm., and in weight 20.6 kg. For the convenience of continuity, they will be classified following the divisions made by Buchholz,¹⁸ although his dates for these divisions seem untenable.¹⁹ We have dis-

¹³ *ibid.*, 5.256-257.

¹⁴ "... and he heaped up a great deal of brushwood," now seems the simplest and best translation of the last part, although it loses the basic ideal of spreading, which was quite clearly warranted by the evidence at Cape Gelidonya.

¹⁵ Cf. the fencing on the Syrian ships from a slightly earlier period in Norman de G. Davies and R. O. Faulkner, "A Syrian Trading Venture to Egypt," *JEA* 33 (1947) pl. 8, and Lionel Casson, *The Ancient Mariners* (New York 1959) 19. This also appears, less clearly, in August Köster, *Das Antike Seewesen* (Berlin 1923) pl. 11.

¹⁶ Miss Taylor, who is studying the pottery for the final publication, has supplied the information concerning the Near Eastern parallels, but has added that she has not yet fully studied the possible Aegean relations. I wish also to thank Miss Taylor for many suggestions and notes which will aid greatly in the final analysis of other parts of the cargo.

¹⁷ Hans-Günter Buchholz has made the most complete study of ingots of this type in "Der Kupferhandel des zweiten vorchristlichen Jahrtausends im Spiegel der Schriftforschung," *Minoica*, Festschrift zum 80. Geburtstag von Joh. Sundwall (Berlin 1958) 92-115, and "Keftiubarren und Erzhandel im zweiten vorchristlichen Jahrtausend," *PZ* 37 (1959) 1-40. Miss Mellink referred me to these two works before the expedition took place,

and Miss Taylor has brought to my attention the mention of ox-hide ingots on cylinder seals in Olivier Masson, "Cylindres et cachets chypriotes portant des caractères chypro-minoens," *BCH* 81 (1957) 7-8, with fig. 1; a number of these possible ingot representations may be seen in William Hayes Ward, *The Seal Cylinders of Western Asia* (Washington 1910) 349-50.

¹⁸ Buchholz, *PZ* 37 (*supra*, n. 17) 7, and *Minoica* (*supra*, n. 17) 96.

¹⁹ Buchholz, in *Minoica*, 93-95, and *PZ* 37 (*supra*, n. 17) 4-6, has dated his three types from stratified examples and examples on Egyptian tomb paintings, and has shown a continuous evolution in the ingot shape. Although there may well be a distinction between type I and types II and III, the last two types are proved to have been used contemporaneously by their appearance together on the west side of the north wall of the tomb of Huya at el Amarna, shown in N. de G. Davies, *The Rock Tombs of El Amarna, III: The Tombs of Huya and Ahmes* (London 1905) pl. 16. Before noticing this painting, I had not readily seen the distinction between the ingot in Nina de Garis Davies, *The Tomb of Huy, Viceroy of Nubia in the Reign of Tutankhamun* (London 1926) pl. 19, carried by a Syrian, and the ingots of Buchholz's type III. Now we may be sure that type III ingots were used between 1400 and 1200 B.C., a period previously assigned only to type II.

tinguished three shapes among our ingots, all of which fall within the limits of his type II. The Gelidonya ingots are designated, therefore, as types IIa, with thick, slightly incurving handles (pl. 87, fig. 17), IIb, sometimes longer and narrower, with a very pronounced raised rim around the edge of the reverse (pl. 87, fig. 18), and IIc, with more widely spaced, slightly pointed handles (pl. 87, fig. 19).²⁰ Twenty-seven of them bore what must be considered foundry marks, all but one made while the metal was still soft. With the exception of the one ingot onto which the mark had been scratched, all marked ingots were stamped on the rough side; some of these carried a second mark, usually a circumscribed X, impressed in the center of the smoother reverse. The significance of these marks has not been determined. Identical marks are found on ingots of varying type and weight. Combinations of marks are also irregular; the circumscribed X is found on the backs of ingots of different types, weights, and bearing different marks on their obverses. Until a complete analysis is made of the material of each ingot, it is not possible to say whether there is a connection between the marks and the quality of the metal.²¹

It has been stated that these ingots were a pre-monetary form of currency and that originally one ingot weighed one talent and equalled the price of one ox; because of this the shape and surfaces of each ingot were molded so that the ingot would resemble a dried ox-hide.²² It is more likely that the resemblance to an ox-hide is purely fortuitous; the "legs," which do not appear on all ingots, were merely handles for ease of portage.²³ It has also

previously been denied that the rough side of an ingot represented the hairy side of a hide, or that the rim on the smoother side represented the curling of a dried skin. Although this is true, the earlier explanations for these features seem incorrect, for it is stated that the rim is caused by shrinkage during the cooling of the copper, and must always be on top in the mold, while the rough side is formed by the mold itself.²⁴ Actually, the rough side must in every case be the top, made irregular by the dross and bubbles rising to the surface of the molten metal, and the rounded rim of the reverse is the result of a deep outline in the sand mold. (After the outline of an ingot had been drawn deeply in clayey sand, the space within this outline would have been pressed down to form a mold. If the bottom of the mold was not then smoothed, a number of shallow concavities might be left, explaining the convex areas that we found on the reverse of each of our ingots.) Furthermore, the draft of each of the Gelidonya ingots showed that the rough, bubbly side was on top in the mold (pl. 87, fig. 20).²⁵ Indeed, it seems that the ingots were not a form of currency at all, ox-hide like or not. Discrepancies in weights of previously known ingots had sometimes been ignored or explained as local variations in the standard used.²⁶ From Cape Gelidonya we have a closed group, equalling in number about half of all ox-hide ingots previously discovered, and we have no apparent standard of weight. The ingots vary between 16 and 27 kg., and few of them are equal in weight to each other, even when variations due to damage and corrosion are considered. Also we found, as did Wace at Mycenae, irregular pieces of ingots which

²⁰ Types IIa and IIb may be accidental variations of the same type (*infra*, n. 25); they are quite similar to ingots from Cyprus (Claude F. A. Schaeffer, *Enkomi-Alasia* [Paris 1952] 32, with pl. 63, fig. 1; and Buchholz, *PZ* 37 [*supra*, n. 17] 29 with pl. 3, fig. 3) and the Greek mainland (I have not yet seen the original publication of the complete ingot from Mycenae, which is well illustrated in Seltman, *op.cit.* [*supra*, n. 2] 4-5; Buchholz, *PZ* 37, p. 36 with pl. 5, figs. 1-2, gives the bibliography for this). Type IIc seems much more like one of the ingots from Serra Ilixi, Sardinia (Buchholz, *PZ* 37, p. 38 with fig. 12a. Fig. 12a, from the same site, more closely resembles our type IIb).

²¹ Except for areas that had come into contact with tin, which caused considerable decay through electrolysis, the copper ox-hide ingots were usually solid and well preserved throughout. The bun and slab ingots, discussed below, were so poorly preserved that they often crumbled under the slightest pressure.

²² Seltman, *op.cit.* (*supra*, n. 2) 1-5.

²³ Buchholz, *PZ* 37 (*supra*, n. 17) 2-4. Although we have shown (*supra*, n. 19) that there can be no chronological distinction between types II and III, the lugless type I ingots do seem to be earlier. The theory that the ingot "legs" were only

handles was previously held by H. R. Hall, *Aegean Archaeology* (London 1915) 67, with fig. 13; and Schaeffer, *op.cit.* (*supra*, n. 20) 33.

²⁴ Buchholz, *Minoica* (*supra*, n. 17) 95. Seltman, *op.cit.* (*supra*, n. 2), 4, n. 2, while believing that the ingots were in the form of ox-hides, had also explained the physical characteristics in this way.

²⁵ After noting the bubbly surfaces of lead diving weights that the sponge-divers cast at our camp, I was led to the belief that the rough sides of the ingots were caused by such bubbles. I would like to thank Robert Barnes, who has much experience in bronze casting, for confirming this, and for explaining the causes for the other features. Mr. Barnes made a small mold in the manner that he would use to cast similar ingots, and the rounded ridges and convex areas would have resulted had an actual ingot been cast in it. That the ridges were neither functional nor representational, but merely the result of chance, would explain why they did not appear on all ingots. I cannot explain the occurrence of ingots whose rough sides are smaller than their smooth sides (Buchholz, *Minoica* [*supra*, n. 17] 95) and feel that these must be re-examined.

²⁶ Seltman, *op.cit.* (*supra*, n. 2) 3.

had been cut or broken from whole ingots.²⁷ These are only left-overs, and represent no particular part of a talent or even the weight of a complete piece.²⁸

Stacked neatly beside piles of ox-hide ingots were more than 20 bun ingots, discs of copper, slightly convex on one side, and averaging almost 4 kg. apiece (pl. 87, fig. 21). Again the variance in weight is such that no standard is apparent. Dikaios found a mold for ingots of this type at Enkomi,²⁹ and an actual ingot has been raised from the sea near the Soli mines in Cyprus.³⁰ Representations of bun ingots occur alongside ox-hide ingots in Egyptian tomb paintings.³¹ Several pieces of another shape were thought to be blanks for making tools, when first excavated, but it now seems that these were also ingots (pl. 87, fig. 22). Although much larger, they are identical in shape to somewhat earlier gold ingots from Egypt.³² As in the case of the ox-hide and bun ingots, these slab ingots vary greatly in size, most being between 25 and 30 cm. in length. Most of them came from area G, where they were lying in several stacks. Other flat, rectangular pieces, of the same size and smaller, may have been still other forms of ingots.

With the copper ingots was found a number of piles of white, powdery tin-oxide.³³ The pile found

²⁷ A. J. B. Wace, "Preliminary Report on the Excavations of 1952," *BSA* 48 (1953) 7, with pl. 2 (a).

²⁸ Further evidence that the ingots were not currency, but were simply blocks of raw metal, is the scene showing an ingot about to be melted down and cast, in Norman de Garis Davies, *Paintings from the Tomb of Rekh-mi-re' at Thebes* (New York 1935) pl. 23, and Davies, *The Tomb of Rekh-mi-re' at Thebes* (New York 1943) I 54, and II pls. 52-53. I would suggest that the Knossos tablets which show ingots with scales tell only how many talents a number of copper ingots of no standard weight weighed, and did not equate copper or bronze talents with a gold unit, as in Arthur J. Evans, "Minoan Weights and Mediums of Currency, from Crete, Mycenae, and Cyprus," *Corolla Numismatica* (Oxford 1906) 361, with fig. 14; nor are average weights valid, as in Michael Ventris and John Chadwick, *Documents in Mycenaean Greek* (Cambridge 1959) 355.

²⁹ Hector Catling has supplied me with this information. He writes that it is mentioned in A. H. S. Megaw, "Archaeology in Cyprus, 1956," *Archaeological Reports 1956* (suppl. to *JHS* 77 [1957]) 25, without being described as that particular type. I would like to express my special gratitude to Mr. Catling for generously supplying me with a vast number of references to Aegean and Cypriot bronzes which he has gathered over some years.

³⁰ O. Davies, "The Copper Mines of Cyprus," *BSA* 30 (1928-30) 78. My thanks to Mr. Throckmorton and Miss Taylor for each bringing this ingot to my attention.

³¹ Buchholz, *PZ* 37 (supra, n. 17) 15, fig. 7. These ingots had formerly been identified as loaves in N. de G. Davies, *The Rock Tombs of El Amarna* (London 1903) I 37, with pl. 31. In the casting scene from the Tomb of Rekhmire (supra, n. 28) are shown two men carrying baskets of what must be copper

beneath ingots 433 and 434, in area G, was raised in one mass in a plastic bag. When dry, it weighed 8 kg., which was approximately half of what had been preserved on the wreck. This tin-oxide was found only where it had been covered and preserved by heavy masses of copper and sea concretion, and it would be impossible to estimate the amount that might have been washed away from more exposed areas. It represents the earliest industrial tin found, although small tin objects have turned up from earlier periods,³⁴ and must strengthen the identification of certain white ingots on Egyptian tomb paintings as tin.³⁵ It should also have some effect on the interpretation of various Near Eastern texts.³⁶

Lying throughout the wreck, in groups which suggest that they had been originally in bags or baskets (pl. 87, fig. 23), were numerous bronze tools, weapons, and household utensils. Two such groups, P V and P VI, were trapped beneath the ingots in that area.³⁷ In P VI were such objects as a bronze double-axe with an oval shaft-hole and a central groove running along the underside of the blades (pl. 88, fig. 24), and a bronze adze (or lugged or trunnion axe) (pl. 88, fig. 25). In P V were a small axe-adze (pl. 88, fig. 26) and a bronze mirror. Throughout the whole wreck, the most common

bun ingots, for they are the same color as the ox-hide ingot in the same scene (Davies, *The Tomb of Rekh-mi-re'* [supra, n. 28] I 54, with II pl. 53, row 3). G. A. Wainwright, "Egyptian Bronze-Making Again," *Antiquity* 18 (1944) 101, believed these latter ingots to be of tin.

³² F. Bisson de la Roque, *Trésor de Tod, Catalogue Général des Antiquités Égyptiennes du Musée du Caire* (Cairo 1950) pl. 4, no. 70505.

³³ Analyzed by Turyağ Laboratories of Izmir.

³⁴ R. J. Forbes, *Metallurgy in Antiquity* (Leiden 1950) 232, 252, 254; G. A. Wainwright, "Early Tin in the Aegean," *Antiquity* 18 (1944) 57.

³⁵ G. A. Wainwright, "Egyptian Bronze-Making," *Antiquity* 17 (1943) 96-97, theorized that one of the two ingots in the *Tomb of the Two Sculptors* (Norman de Garis Davies, New York 1925, pl. 11) was tin, although Davies had identified it as lead.

³⁶ W. F. Albright has suggested that the Gelidonya tin provides an additional argument for identification of *snāku* in the old Assyrian documents from Cappadocia as "tin" rather than "lead," although he does point out that these documents are considerably older than the shipwreck.

³⁷ Other groups designated by Roman numerals, in areas E and M, were not *in situ*, but were formed in natural pockets into which small objects had been carried by the current. The objects in E were probably from P, and those in M could have either drifted through small passages under the Boulder, or could have been carried from G and S. It was noted that the current, when running westward through the Gulley, tended to sweep objects around the west end of the boulder. A change in direction of the current, a common occurrence, would have then moved these pieces eastward and deposited them along the north edge of the Boulder in area M.

objects were agricultural implements. A large number of socketed picks (pl. 88, fig. 27), hoes or plow shares (pl. 89, fig. 28 a, b, c), and one socketed spade (pl. 88, fig. 29) were found.³⁸ Weapons included spearheads, one with rounded midrib and flat, triangular tang with two rivet holes (pl. 89, fig. 30), and two tiny halberds or billhooks, with pointed ends and rectangular blades (pl. 89, fig. 31). Household utensils included a *kebab* spit, exactly like those still used in Turkey, several bowl fragments, and pieces of rod tripods³⁹ (pl. 89, fig. 32). Some of these objects were intact, but many more were broken and were found in groups with ingot fragments, indicating that they were being transported not for their functional use, but for the metal of which they were made. Previous evidence had indicated that in this period bronze objects were commonly melted down for re-use, and founders' hoards on land are made up of possible bagfuls of broken tools,⁴⁰ sometimes with ingot fragments.⁴¹ Other tools were in fine condition and could have been for trade or for use by the crew; an adequate supply of whetstones was on hand to keep them sharp (pl. 88, fig. 33).

A merchant must have weights, and 48 of these were found, forming three sets. Those of the ovoidal, or "sphendonoidal," class (pl. 90, fig. 34) are approximate multiples of nine and a fraction grams and the smallest of these, marked with a unit sign on its top, is exactly 9.3 grams, an Egyptian *qedet*.⁴² This is a standard also used in Cyprus⁴³ and Syria.⁴⁴ Other weights were cylindrical and domed, but their standards have not yet been determined. Most were of hematite. With few exceptions, the weights came from area G, which we sometimes called the "captain's quarters" because of the quantity of such personal possessions. Here were found three com-

plete scarabs, one fragment of a scarab, and a scarab-shaped plaque which was inscribed on both faces. The latest of these (pl. 90, fig. 35; length 1.8 cm.), which depicts the god Re with falcon's head and a human's body, the left arm of which terminates in a uraeus-serpent, can be dated with almost complete certainty to the XIXth Egyptian Dynasty; the greater number of those scarabs with parallel motifs and iconography seem to come from Palestinian sites.⁴⁵ Probably from the same area, but swept into area M IV, was a finely carved cylinder seal, showing two worshippers facing a deity wearing the *atef* crown (pl. 90, fig. 36; length 2.6 cm., diam. 1.2 cm.). It seems to have been made in North Syria sometime during the 18th or 17th century B.C.; that it was still in use some centuries later is not unusual.⁴⁶ In area G were also two polished stone mace-heads, one with a metal lining in its perforation (pl. 90, fig. 37 a, b) and the other with a collar carved around the perforation on one side. It is interesting to note that similar perforated stone hammers were sometimes used for metal working in the Bronze Age,⁴⁷ and the occurrence of these may suggest that our merchant was a tinker who dealt both in raw metals and finished products. If this is the case, several problems of our wreck may be solved. A large stone in area S (Inv. no. 491), which was found lying on part of the hull, but which was not a stone native to the area in which we worked, could have been a simple anvil; large metal anvils do not seem to have appeared before the development of iron working.⁴⁸ There is also some evidence to suggest that lugged axes (pl. 88, fig. 25) were used by smiths in shaping certain articles. The blades were fastened securely in a vertical position, and sheet metal was moved around on them while being beaten.⁴⁹ These blades could, however, have been

³⁸ There is some disagreement over what the various tools were. An interesting attempt to identify such tools with Biblical names is in G. Ernest Wright, "I Samuel: 19-21," *BiblArch* 6 (1943) 33-36.

³⁹ Miss Taylor recognized these fragments as being from tripods of a type found at Ras Shamra. J. L. Benson has collected and illustrated other tripods in "Bronze Tripods from Kourion," *Greek, Roman, and Byzantine Studies* 3 (1960) 7-16; all of those tripods with features similar to our pieces are dated later than the shipwreck. (However, see H. W. Catling, "Bronze Cut-and-Thrust Swords in the Eastern Mediterranean," *ProcPS* 22 [1957] 111, n. 7.)

⁴⁰ John C. Rolfe, "Discoveries at Anthedon," *AJA* 6 Old Series (1890) 107. H. W. Catling, *op.cit.* (supra, n. 39) 104; references to other such hoards may be found here, n. 10, and 109, n. 5.

⁴¹ Wace, *loc.cit.* (supra, n. 27).

⁴² Flinders Petrie, *Ancient Weights and Measures* (London

1926) 13 and 20.

⁴³ Evans, *op.cit.* (supra, n. 28) 349-51.

⁴⁴ Claude F.-A. Schaeffer, "Les fouilles de Ras Shamra-Ugarit, huitième campagne," *Syria* 18 (1937) 150. Here was found a weight of 18.7 grams, with two parallel strokes on its top, along with many unmarked multiples.

⁴⁵ I am indebted to Alan Schulman for these data, which are from a paper he delivered on the scarabs at the 171st Meeting of the American Oriental Society in Philadelphia, 1961.

⁴⁶ Miss Edith Porada kindly studied this seal and suggested the information given.

⁴⁷ H. H. Coghill, "Metal Implements and Weapons," *A History of Technology* (Oxford 1954) I 609, with fig. 401 A. I have not yet seen the evidence on which this is based.

⁴⁸ *ibid.* and Forbes, *op.cit.* (supra, n. 34) 121.

⁴⁹ R. Maxwell-Hyslop, "Bronze Lugged Axe- or Adze-Blades from Asia," *Iraq* 15 (1953) 71.

wood-working tools, the stone hammers might have been weapons or ceremonial maceheads, and the large stone "anvil" might have been a crude anchor. Also against the tinker theory is the complete absence of molds, although several lumps of unworked clay were in the cargo. The strongest evidence for a smith having been on board is the bronze swage block (length 10 cm.) found in area E I (pl. 90, fig. 38). Such blocks are still in use; pins are drawn out in the variously sized grooves on the sides, and the tapering holes are used for hammering heads on rivets and bolts.⁵⁰

There were other items of trade besides the metal. Several pieces of crystal (pl. 90, fig. 39) were found near the scarabs, and a jar of glass beads was found in area P. A lamp (pl. 90, fig. 40; diam. 11.7 cm.) and two stone mortars were probably for the crew's use. One of the stone mortars has a peculiar duck-tailed end opposite its spout (pl. 87, fig. 41).

CONCLUSIONS

The ship appears to have sailed and sunk around 1200 B.C. We may suppose that it was sailing from east to west, carrying a load of copper from the mines in Cyprus. It is interesting to note that some years ago, W. F. Albright speculated that the Biblical Tarshish Ships were not ships from Tarsus or Tartessos, as had been speculated earlier.⁵¹ Deriving the word "tarshish" from an Akkadian word meaning smelting plant or refinery, he believed that these ships were the Phoenician ships which carried metal from mines. Although these references are from a slightly later period, our discoveries prove that such ships, dealing almost exclusively in metals, did sail.⁵² Whether or not our ship was Syrian, Cypriot, or Hel-

⁵⁰ I wish to thank Paul W. Shaw, an expert metal worker, for making this identification. Previously I had assumed that it was a metal-working object only on the basis of its similarity to the tiny anvil in John Evans, *The Ancient Bronze Implements, Weapons, and Ornaments, of Great Britain and Ireland* (New York 1881) 182-83, with figs. 217-18.

⁵¹ W. F. Albright, "New Light on the Early History of Phoenician Colonization," *BASOR* 83 (October 1941) 21-22.

⁵² Another piece of literary evidence, presenting the possibility of smiths traveling on ships, has just reached me thanks to Hugo Mühlestein. He has theorized that the *oka-tablets* from Pylos refer to ships, saying that the word *oka* designates a ship (*όκρας*) in *Die oka-Tafeln von Pylos* (Basel 1956) 36-41, with additional evidence in *Estratto dall'Athenaeum* New Series 36 (1958) 366-67. If this is the case, it is interesting to note that almost every ship has as one of its leaders a man who has also turned up as a smith in one of the Jn tablets (*kirijijo, komawo, atijawo, perino, erikowo*, etc.), but it seems that in no case are two smiths on board. This had led Mühlestein to pose the question of whether smiths were indispensable on military transports during the Bronze Age, and had offered evidence, previous to the discovery

ladic, however, is still difficult to say. The fragmentary portion of the ship's structure tells us little. As we have seen, it reminds us of the ship built by Odysseus, but there is nothing that could prove it was not a Syrian ship.⁵³ Even Egyptian sea-going vessels, differing greatly in construction from Aegean vessels, had all of the members which we have found preserved in our hull.⁵⁴ The final analysis of the wood of the Gelidonya wreck will tell us only where the wood may have come from, not where the ship itself was constructed.

The cargo gives more evidence on which to speculate about the nationality of the ship, but it is no more conclusive. The pottery finds parallels from the Greek mainland to the coasts of Syria and Palestine, including Cyprus and Tarsus in between; if, from a closer examination of the fabric, we are able to determine exactly where the pottery was made, there will remain the possibility that it was part of a cargo picked up en route. The sole exception is the lamp, the only one on board, which must have been the ship's lamp; unfortunately, it might have been a foreign replacement. The scarabs and cylinder seal must be discounted, for the possibility that they were trinkets picked up during the voyage is considerable. The copper and bronze were almost certainly from Cyprus. Many of the marks on the ingots are identical to potters' marks from Cyprus and from the Cypriot colony near Ras Shamra in Syria. While it must be admitted that most of the marks are simple linear designs which are often common to Linear B as well, the marks on the tools seem to be exclusively Cypro-Minoan. The shapes of the tools seem also to be Cypriot,⁵⁵ although some of their closest parallels come from the Acropo-

of the Gelidonya wreck, that smiths traveled on ships at all.

⁵³ For the scanty evidence we have of the appearance of Bronze Age ships, mostly from fanciful and inaccurate drawings and carvings, see Spiridon Marinatos, "La Marine Crête-Mycénienne," *BCH* 57 (1933) 170-235, and G. S. Kirk, "Ships on Geometric Vases," *BSA* 44 (1949) 116-17, which includes several of this period. To the bibliographies found in these articles may be added James Mellaart, "The Royal Treasure of Dorak," *ILN* 235 (1959) 754, with fig. 2, and the crude graffiti at Enkomi, Schaeffer, *Enkomi-Alasia* 102, with fig. 38, and on Malta, Diana Woolner, "Graffiti of Ships at Tarxien, Malta," *Antiquity* 30 (1957) 60-67. An example of a Syrian ship has been mentioned (supra, n. 15).

⁵⁴ Although it is generally believed that Egyptian ships lacked ribs and keel, James Hornell points out the probability that "a few ribs are inserted after the hull planking has been assembled and in place," and shows that a keel plank was used, in "The Sailing Ships of Ancient Egypt," *Antiquity* 17 (1943) 28 and 30.

⁵⁵ Mr. Catling states that out of 302 recognizable pieces of bronze, 232 have close parallels in Cypriot hoards. The 302 are made up of 41 forms, 27 of which have close parallels in Cyprus.

lis hoard in Athens.⁵⁸ This would suggest only that these latter objects had been brought to Greece in a vessel such as ours.⁵⁷ The tin could be from a number of places. Ox-hide ingots appear in Sardinia,⁵⁸ suggesting voyages at least that far west. There is no reason to suppose, however, that Spain, which supplied so much of the tin in later antiquity, was the source of our tin. Closer sources include Byblos,⁵⁹ and perhaps Crisa near Delphi,⁶⁰ although the occurrence of tin at the latter site is not universally accepted.⁶¹

Even though we may conclude that the tools and ingots were Cypriot, it is possible that they were being transported by traders from other lands. Ox-

hide ingots were associated with Syrians in Egypt, as in the tombs of Rekhmire⁶² and Huy,⁶³ and even on Cyprus itself we have the small figure of a man in Syrian dress carrying an ingot.⁶⁴ Other representations, earlier than our shipwreck, show *Keftiu* tribute bearers carrying ingots,⁶⁵ but if the *Keftiu* were truly Minoans, the Mycenaeans would surely have captured this trade by now. Further study will answer some of the problems raised, but even more enlightening will be the relocation and excavation of the other ingot-carrying ships which have been reported in the Mediterranean.

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The most common objects are also those which are most common in hoards.

⁵⁶ Oscar Montelius, *La Grèce Préclassique* (Stockholm 1924) 152-56.

⁵⁷ It has been suggested by Ventris and Chadwick, *op.cit.* (supra, n. 28) 356, that Pylos tablet Ja 749 may refer to the total weight of metal (copper or bronze?) that has been distributed to local smiths, as recorded on a series of tablets. The total equals 1011 kg. (Ventris and Chadwick give 1046 kg., using only approximate values for the standard of weight, as explained on p. 57). This is almost exactly the weight of the copper and bronze from the Gelidonya wreck. Is it too fanciful to suggest that Ja 749 was written up on receipt of a normal shipment of copper and bronze?

⁵⁸ Supra, n. 20.

⁵⁹ Forbes, *op.cit.* (supra, n. 34) 239.

⁶⁰ O. Davies, "Two North Greek Mining Towns," *JHS* 49 (1929) 92-93; G. A. Wainwright, "Early Tin in the Aegean," *Antiquity* 18 (1944) 59.

⁶¹ Forbes, *op.cit.* (supra, n. 34) 244.

⁶² Davies, *Rekh-mi-re'* (supra, n. 28) pl. 22, *Paintings* (supra, n. 28) pl. 12.

⁶³ Davies, *The Tomb of Huy* (supra, n. 19) pl. 19.

⁶⁴ R. D. Barnett, "The Nimrud Ivories and the Art of the Phoenicians," *Iraq* (1935) 209, with pl. 28; the ingot is here identified as a skin of wine. Schaeffer, *Enkomi-Alasia* (supra, n. 20) 31, with pl. 66.

⁶⁵ Davies, *Rekh-mi-re'* (supra, n. 28) pls. 18-20; *Paintings* (supra, n. 28).

Excavations at Morgantina (Serra Orlando) 1960

Preliminary Report V

RICHARD STILLWELL

PLATES 91-94

The sixth season of the excavations of the Princeton Archaeological Expedition to Sicily working at the site of Serra Orlando, the ancient Morgantina, lasted from April 4 to June 24. Exploration continued in four main areas, the region of the Hellenistic Agora, the residential hill to the west, the hill to the east of the Agora, and the Cittadella, the site of the early acropolis of the city.¹

THE AGORA

Along the southeastern limit of the Agora, the clearing of the long building, identified the year before as a granary,² was completed by removing a considerable section of earth that had been left over the north central part. Here, instead of the long storage chambers that characterize the southern half of the building, was a series of four rooms opening one into the other, and used, most probably, for the storage of other comestibles, and perhaps also as administrative offices. The southernmost of the rooms, which was also the smallest, measured 6.50 m. by 3.50 m., and was accessible only from the larger adjoining chamber to the north. As in the previous exploration of the building, two periods of occupation could be distinguished, the earlier, of the third century, and the later of the second century B.C. In the interim the floor level had been raised about half a meter. There were no finds that could be associated with any particular use of the room, but its secluded position suggests that perhaps here had been kept articles of some value. The

larger room just north of this had, in common with some of the rooms excavated the year before, a small doorway that gave access from the western side of the granary, and a larger door on the north side, from what seems to have once served as an entry into which carts could be driven and unloaded under a protecting roof. To the north of this entry was another chamber, excavated in 1959, which had served in the second and first centuries as a place for kilns. Its earlier use had been obliterated by much reconstruction and changes of level. In the southwestern corner of the room, the large kiln, some two meters in diameter, was completely cleared, and the floor,³ equipped with holes for the passage of the heat from the fire below, was found well preserved and still supported on two brick arches. Each of the remaining three corners of the room were occupied by smaller kilns, too small indeed to serve for more than the firing of small objects. It was clear in probing the foundations of the north and south parts of the building (pl. 91, fig. 1) that the smaller, northern rooms were an addition to the original long granary rooms A and B. Since the construction of both the north and the south section is identical there can hardly have been any great interval of time between the building of the two parts. The difference in time of construction that did exist explains, however, the presence of a buttress in the middle of the south wall of Room C since, when constructed, this wall would have been an exterior one.

¹ As in all our preceding campaigns, the Expedition was greatly encouraged by the ever helpful cooperation of the Italian authorities. The chief of the Soprintendenza of Eastern Sicily, Professor Bernabò Brea, together with his staff, showed invariable kindness and interest in the work. It was our good fortune to enjoy once again the efficient services of our head foreman, Signor Antonino Giucastro, our restorer, Sig. Natale Di Tommaso, and our excellent foremen, Sigg. Tindaro Sidoti, Francesco Campione, Giovanni La Versa and, for a time, Angelo Tudisco.

The staff consisted of the author of this report as Field Director, Mrs. T. W. Roberts in charge of inventory, Mrs. Barbara Carmel whose task it was to clean our many coins and other

finds, a work to which were added administration and commissariat. The trenchmasters were Dr. Mario Del Chiaro, Dr. Madeleine J. Sitterding, J. Philip McAleer, and Donald White. The architect was Mr. George Hartman. For a time we were reinforced by the presence of Dr. Doris Taylor, who not only took charge of an occasional trench, but also continued her study of the second and third century pottery. The Expedition must acknowledge gratefully the financial support of Princeton University and its Research Fund, the Spears Fund, and the Bolingen Foundation.

² *AJA* 64 (1959) 130, 131.

³ *ibid.* and pl. 27, fig. 20.

The back wall of the entire building, on the east toward the hill, had once had a thick coat of waterproof stucco. Although no formal drainage channel was observed, the nature of the soil behind the building would have been sufficiently porous to allow water to drain through it or, in the event of heavy rains, there was sufficient space left between the building and the scarp of the hill to give ample drainage. A short extension of the west wall of the building and a return toward the east provided protection on that side, and formed a narrow areaway giving access to the space behind the building. A doorway had been provided in the north side of the northernmost room of the granary, but apparently had never been used, since it had been walled up at an early period. One may imagine that there had originally been an intention to extend the granary still farther to the north. It is interesting to note that in certain rooms (B, C, D) small access doors were provided, with their sills at a fairly high level, so that one could pass directly from the rooms to the alleyway behind, but it was also noted that these had all been carefully walled up, most probably as soon as the building had been finished. They may be explained as doors of convenience to allow the workmen to reach both sides of the structure while construction was going on.

On the west side of the Agora a series of five of the shops of the West Stoa was partially or wholly cleared.⁴ Initially it was necessary to cut back the scarp of the hill behind the rear wall at an acute angle, so as to avoid danger of a collapse as the material and earth that filled the shops was removed (pl. 91, fig. 2). As work progressed, it became clear why the building had been ruined and abandoned; the entire scarp of the western hill, which at this point is clayey and hence likely to flow, had moved forward as do so many hillsides today in Sicily, and thrown down the upper part of the walls. The shops were two rooms deep, the forward one being approximately 4.50 m. square, the rear room of the same width but only 2.50 m. deep. At the south end was a space some 2.2 meters wide intended, presumably, for a stairway leading to an upper storey. This, however, had never been constructed, although there are traces of beam cuttings that may have held a temporary wooden stair. In the front room of the first shop a small door led out into the stairwell. There was no connection between adjacent shops. Each was choked with the great

ashlar blocks of the rear wall and the upper parts of the dividing walls (pl. 91, fig. 3). No well-finished blocks were found, all were rough picked, and examination of the doorways showed that stone sills had never been set in them although, as is usual in good construction, the foundation of the front wall of the shops was carried along without interruption. The foundations themselves were sunk 1.60 m. into the hardpan, and the cellular construction must have been thought sufficiently strong to retain the weight of the hillside above. On the floors of two shops, which were cleaned out entirely, lay a thin layer of fallen roof tiles, directly above a layer of small pebbles or stones mixed in places with many bones of small animals. Scarcely any pottery sherds came from the bottom level, nor were there any other objects to record. It seems clear, as far as the work has gone, that the building was still in process of construction when the collapse occurred, that possibly a temporary roof had been placed over the lower storey and that the shops were being used by the workmen on the job as places to stay, or to eat, while further work was in progress.

The chronology of the shops is not easy to establish. While their orientation is that which must be associated with the planning of the years around the turn from the fourth to the third centuries B.C., and their style of construction surely belongs to the first half of the third, two half coins of Hieron II, cut between 214 and 211 B.C., were found behind the rear wall, well below its preserved level. It is unlikely, from the scanty signs of occupation within the shops themselves, that they had been long in use, and we are faced with the necessity of supposing that the rear wall stood free of the scarp for nearly half a century, which is most improbable, or that the coins in question had "percolated" about the time of the taking of Morgantina in 211 B.C. when there is, over the entire site, evidence of very considerable devastation. It may safely be assumed, however, that the building did not survive the end of the third century. In the fill of the shops only one piece of architectural carving appeared, a fragment of an ovolo carved with an archaic pattern of leaves (pl. 91, fig. 4). It had been used, doubtless, as a piece of rubble in the building of the shops, but its presence points to the existence in the neighborhood of an archaic building. It will be recalled, perhaps, that in the House of the Doric Capital, excavated on the hill east of the Agora in 1956, a Doric

⁴ The fronts of the first three had been laid bare in 1959. *ibid.* pl. 23, fig. 13.

capital of early pattern was found built into one of the walls.

Further clearing was begun, at the end of the season, in front of the Southwest Terrace.⁵ The two small rooms with a passage between, excavated in 1956, proved to lie above, but not to be connected with, a much more massive structure. Of this we were able in the time available to uncover only two heavy parallel foundations, built of large well-squared, closely laid blocks of sandstone, and a portion of a wall running north-south to connect them. A little farther north, some 2.50 m. away, was another foundation, parallel to the northern of the two walls. It had a short extension at its eastern end. The original foundation extends down for four courses to a depth of about 1.70 m. from its present top. The extension does not go as deep.

Above the terrace, well up on the slope, a long trial trench showed some lightly built walls at a high level, probably shops or buildings facing on a street that ran along behind the West Shops.

THE WEST HILL

It had long been apparent that on the hill to the west of the Agora houses had been built on a regular grid pattern whose orientation, 325 degrees azimuth, coincided with that of the Sanctuary of Demeter and Kore on the ridge to the north, and also agreed closely with the orientation of the West Shops of the Agora. Here, on the further limit of the plateau, had been found in 1957 the House of the Tuscan Capitals, and another house nearby had been excavated by Sig. Papalardo in the 80's of the last century. Accordingly, two trenches each five meters wide by eighty long were cut at right angles to each other across the top of the plateau (pl. 92, fig. 5). Beneath a relatively shallow deposit, scarcely more than 0.75 m. on the average, were found parts of at least five or six residences, each with a peristyle court, *cocciopesto* floors or floors of small square tiles, and two intersecting streets. The wider of the two, running NE-SW, was over six meters wide, the one at right angles only slightly less. Parallel to this latter was another street about 40 meters to the west, so that we may tentatively assign to the blocks a width of about 120 feet.⁶ It would be premature to try to establish precisely the modulus of

the block system. This must await further excavation. At the angle where the two trenches met were the remains of a large house, built in great part of large, squared, and re-used blocks (pl. 91, fig. 6). The principal room, as excavated, lay to the south, and opened on a court which had a peristyle on two, or possibly three sides (pl. 93, fig. 6a). The great room measures almost seven meters square, and at its southeastern corner the walls are preserved to a height of nearly two meters. Extensive remains of the stucco in the incrustation style are preserved. Above a dark blue-black dado are panels in red and yellow, divided by sunken white strips. The single doorway is flanked by massive square blocks, on one of which is preserved a remnant of the plaster jamb molding. In the room was once a rich mosaic floor, of which only the surrounding meander border is preserved (pl. 93, fig. 7). There is a very noticeable use of yellow stone tesserae in the border, and the house has been called, for the present, the House of the Arched Cistern. To east and west of this room are two narrow service passages, in the western of which, set into the wall, was the opening of a cistern. A lead water pipe also was placed here at a later period when the house was remodeled; it may be connected with the narrow room to the west where apparently a fountain had been built into the southern end. The peristyle itself is worthy of notice, since the lower drums of the stone columns are still in place. They give the appearance of having been reworked with a slight hollow a little off center. Here also were found one complete block, and numerous fragments, of a late type of Doric stone entablature which, if it indeed belongs to the peristyle, is the first such example in a Morgantian house. A part of one of the capitals also was recovered (pl. 93, fig. 8). That the building extends still farther to the north is certain, and it will presumably be excavated wholly during the season of 1961. As might be expected, the houses that lie toward the eastern and western verges of the plateau seem to be the most important ones. Their owners were, through riches or influence, able to obtain choicer building sites. Toward the center of the complex it would seem that the structures are less ambitious.

The absence of any trace of the mosaic floor in the center of the room with the meander is puz-

⁵ *loc.cit.* K 11-K 14. Since this report went to press, the excavations of the season of 1961 have shown that the so-called Southwest Terrace was actually a small theater. The details of this welcome discovery will appear in the next report.

⁶ The same distance may be observed still further to the west, down the hill, where a street ran below the Villa of the Tuscan Capitals and above the House by the City Wall.

zling. But the presence of a very mixed fill in the middle of the room suggests that at some time plunderers had sought for what they might find, and it is tempting to think that in the years not too long after the abandonment of Morgantina there was a search for figured mosaics, the emblemata of which could be raised, carried off, and sold for the adornment of a house elsewhere.

THE EAST HILL

The area north of the House of Ganymede was explored, and showed remains of house walls of the fourth century. From a shallow, cement-lined cistern came an assorted variety of pottery sherds and figurines, some dating from the early part of the century, and from a small cache in the angle of two walls, at floor level, a hoard of eleven Syracusan coins dating from the last quarter of the fourth century, and including one Siculo-Punic piece.

On the saddle midway between the House of Ganymede and the House of the Doric Capital were found two kilns: one is circular, about 1.60 m. in diameter, the other square, of about the same dimensions. Both were built of mud brick that had gradually hardened in the process of firing the load in the kilns. Each had a brick or tile pillar in the center to help carry the floor of the kilns. Depressions in the hardpan nearby suggest pits where clay might be worked, and ash deposits were noted all around the area. In westward extension of the trench down-hill, to the edge of the scarp overhanging the granary, were the remains of middle class dwellings dating mostly from the second century. The fill of one of the rooms contained several terracotta molds for masks, evidently the molds for some of the objects made in the kilns above (pl. 93, fig. 9).⁷

CITTADELLA

During the month of May work was carried on with a large force on Cittadella, with the object of clearing as much as possible of the central area on the perimeter of which excavations had been made in 1958 and 1959⁸ (pl. 92, fig. 10). The most striking monument is, of course, the building some 25 m. long, running east-west, and consisting of

⁷ The number of kilns already found in the excavations bears witness to what must have been a principal, if not indeed the chief, industry of Morgantina. As the center of a wheat growing region, the problem of fuel would have been easy to solve, since straw was abundant. In 1956 the author visited a small modern kiln near the foot of Cittadella where the brick- and tile-maker demonstrated his procedure, burning a large haystack

four square rooms each with a door opening to the north.⁹ In the center of each room, but in every case slightly off the axis of the doorways, was a square stone pier. The material of the piers was a fine shell limestone such as is used elsewhere in Morgantina for carved column drums and capitals. It was noted that the floors of the rooms were exceedingly uneven; they consisted, in fact, of the irregular surface of the native rock. The walls had been sunk a little way into the rock, as had the piers, but there was no correspondence between the sills of the doors and the general floor level inside. Trial trenches on the south side of the building, where the rock level was nearly two meters higher, showed conclusively that there had never been any structure on that side, and hence that the building could not have been the lower part of a stoa-like structure with a colonnade or portico to the south. In front of the rooms, on an irregular pattern, slighter walls had been constructed with openings that were carefully offset from the doorways to the four square rooms. The purpose of the building still remains a problem. That it had a very considerable importance is shown by the heavy, solid construction of the rubble stone walls, which are on the average 0.80 m. thick, strengthened at the angles by large squared blocks.

North of the building there appears to have been, during its period of use, a fair-sized open space, bounded to the east by a long row of much larger rooms, excavated in 1959. This open area had been encroached upon in the period not long before the destruction of 459 B.C. Still later a number of changes were made, but there is no indication that the four-room building was ever rebuilt.¹⁰ It will be recalled that in 1958 one of its rooms was found filled with débris and sherds of the late sixth and early fifth centuries, including the splendid red-figured crater ascribed to Euthymides.

At the north edge of the small plateau further trials revealed, just as elsewhere in the area, a succession of occupation periods ranging from early archaic to Hellenistic times.

The work on Cittadella added a number of items to the collection of architectural terracottas, includ-

during the period of firing the kiln.

⁸ AJA 64 (1960) 133, 134.

⁹ This building had been partially cleared during the preceding season. It now lies entirely open.

¹⁰ The careful avoidance of later rebuilding is suggestive of the possibility that the structure may have had a religious significance.

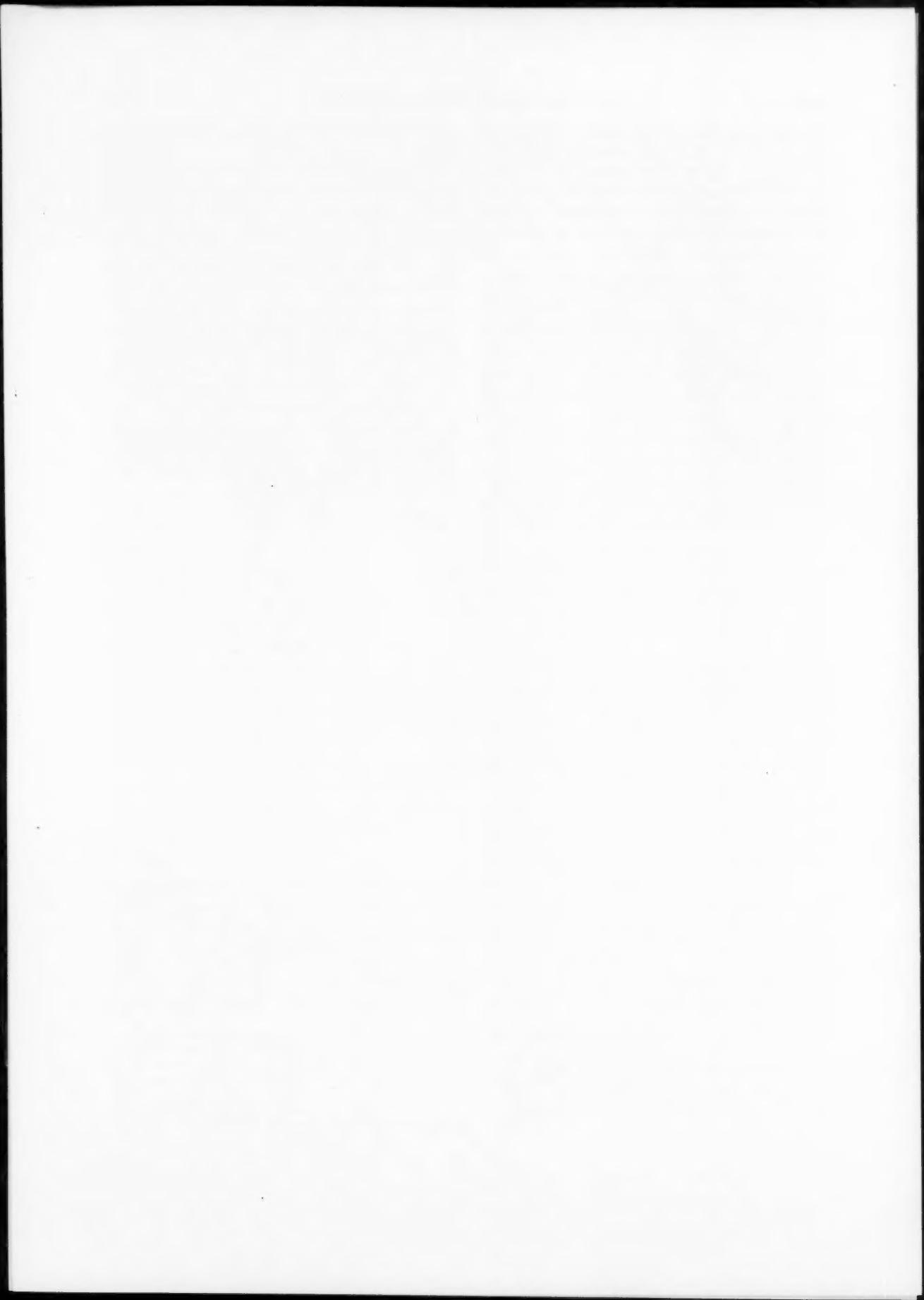
ing a gorgoneion antefix (pl. 93, fig. 11) and two more maenad antefixes, one of a type not hitherto noted (pl. 94, fig. 12). Her rather dejected appearance is in marked contrast to her sprightly companion, who takes her place with others found in earlier seasons (pl. 94, fig. 13). It appears, on comparing the latter with others of the same type, that while she may have been from the same mold as one of her sisters, the coroplast reworked some of the features. A handsome fragment of terracotta revetment, possibly from a small altar, shows a bull with lowered head (pl. 93, fig. 14). Much Siculan ware and imported ware was found, among which may be cited a red-figured sherd from a kylix (pl. 94, fig. 15). A traveler, with chlamys and petasos, leads his spirited horse to the right. Several black-figured, deep skyphoi were also found, one of which proved to be practically complete though broken into many fragments. It shows a lively Dionysiac revel on both sides, and is a welcome addition to

the collection of imported vases at Morgantina (pl. 94, fig. 16).

Among the many lamps found during the season one with black glaze may be mentioned. It is the three-spouted variety, and is the first example of its kind found in the excavations (pl. 94, fig. 17).

Thirty-five more coins of the "Hispanorum" series were added to the impressive collection already found on the site. One unusually rewarding example of the numismatic art came from the West Hill, below the level of the third-second century houses. It was a silver decadrachm of Syracuse bearing the signature of the artist Euainetos (pl. 94, fig. 18). Its presence at that particular spot, together with a deposit of broken fragments of black-glazed Attic ware nearby, suggests that the area had been occupied even as early as the late fifth century B.C., and exploration here will be carried on at a deeper level than was opened in 1960.

PRINCETON UNIVERSITY



Athens and the East Hallstatt Region: Cultural Interrelations at the Dawn of the Iron Age

STEPHEN FOLTINY

PLATES 95-96

During the excavations in the Agora in 1949, Professor Homer A. Thompson found the cremation burial of a warrior-craftsman dating from the Late Protogeometric or the Early Geometric Period.¹ The contents of this tomb have been described and evaluated by Carl W. Blegen,² who has shown by an excellent analysis of the pottery that this burial, designated as Grave XXVII, must be assigned to a transitional phase between Protogeometric and Geometric. Blegen has also discussed the eleven iron objects deposited in the same grave. Concerning these, however, some questions remain unsolved even after his careful study. Furthermore, recent investigations have thrown new light on the problems of the period in question, and so it seems worthwhile to attempt a new analysis of the iron objects from Grave XXVII. They appear to be of great significance not only for the Late Bronze Age chronology of Greece, but also for the cultural interrelations and contacts between the Greek mainland and Central Europe in that period.

The weapons and tools under discussion include two snaffle bits, a broad flat axe, two spearheads, a long sword, two knives, a fragment of a pin, a chisel and a hasp which probably belonged to the bridle bits.

THE BRIDLE BITS (pl. 95, fig. 1:8-9)

Since our bridle bits are the earliest iron bits not only from Athens but from the Greek mainland,

¹ *Hesperia* 19 (1950) 330. I am grateful to Miss Eva Brann for drawing my attention to this grave, and to Mrs. Evelyn L. Smithson for fruitful discussions about the chronology of the grave inventory. I am much obliged to Prof. A. Alföldi for his valuable ideas and suggestions. The financial assistance of the Wenner-Gren Foundation for Anthropological Research in New York made possible my European research travels in 1958 and 1959. The assistance of the American Philosophical Society and the American Council of Learned Societies in 1960 enabled me to make this work more complete.

² "Two Athenian Grave Groups of about 900 B.C.," *Hesperia* 21 (1952; quoted infra as Blegen 1952) 279-94. The catalogue of the objects from the Agora Grave XXVII appears on pp. 289-93.

³ Blegen 1952, 287.

they have a strong claim to attention. Blegen³ did not find good Protogeometric or Geometric parallels for them. As to their form, he referred to a pair of bronze bits discovered at Mycenae. This bronze type may have come to Greece from the Near East at an earlier date, as Potratz⁴ pointed out. But attention should be paid to the fact that no iron bits of this kind have been found in the Near East. And we also have to take into consideration that after the fall of Mycenae trade relations between Greece and the Near East apparently ceased completely for a time. Thus the bridle bits of Mycenae cannot be considered prototypes of the Agora bits.

Robinson⁵ and Yalouris,⁶ who also dealt with the bridle bits of ancient Greece, did not publish any good analogy for the Agora specimen. Thus there seems to be no contemporary parallel to our snaffle bits in the Aegean. We have, then, to look for their origin somewhere else: a search for corresponding bits in the Carpathian Basin and its neighboring areas will prove fruitful.

As Hančar⁷ has demonstrated, the first bridle bits in Europe were made of antler and they were found in eastern Hungary (Bodzásprt) and in southwestern Russia (Usatovo near Odessa), on the steppes between the Tisza and Dniepr, around 2000 B.C. The Carpathian Basin and the Pontic region have had cultural connections at least from the Neolithic period onward.⁸ These contacts were main-

⁴ H. A. Potratz, "Die Pferdegebisse des zwischenstromälandischen Raumes," *AOF* 14 (1941-44) 1-39. See p. 6 and fig. 11 on p. 9.

⁵ D. M. Robinson, *Excavations at Olynthus. Part X. Metal and Minor Miscellaneous Finds*. The Johns Hopkins University Studies in Archaeology No. 31 (Baltimore 1941) 487-95.

⁶ N. Yalouris, "Athena als Herrin der Pferde," *MusHelv* 7 (1950) 19-101, esp. 30-47.

⁷ F. Hančar, "Das Pferd in prähistorischer und früher historischer Zeit," *Wiener Beiträge zur Kulturgeschichte und Linguistik* 11 (1955; Wien 1956; quoted infra as Hančar 1956) 40-41, 68-72 and 529-32.

⁸ M. Gimbutas, *The Prehistory of Eastern Europe. Part I* (American School of Prehistoric Research, Bulletin No. 20, Cambridge 1956). Cf. S. Foltiny, "The Oldest Representations

tained during the Bronze and the Early Iron Ages,⁹ and later. At the end of the Urnfield Culture of the Late Bronze Age in Central Europe, the relations between the two areas became closer. Besides the horse-bits of antler, metal bridle bits came into use in the Carpathian Basin. The bronze and iron horse trappings of the pre-Scythian population,¹⁰ referred to as the "Thraco-Cimmerians," have appeared in rapidly growing numbers. From the Hungarian territory they have spread in the east Alpine region, in the northwest Balkans, in South Germany¹¹ and Bohemia, in Switzerland¹² and north Italy,¹³ at the turn from the period Hallstatt B to Hallstatt C (in Reinecke's scheme). Though it is still a much debated problem when and how far the Cimmerians themselves had advanced in Central Europe,¹⁴ a continuous steppe influence was certainly present there during the Bronze and the Early Iron Ages.

Kossack¹⁵ has distinguished four production-centers of the Hallstatt Age horse-trappings in Central Europe: Bohemia, Bavaria, western Hungary and Carinthia-Slovenia. Among these, the west Hun-

of Wheeled Vehicles in Central and Southeastern Europe," *AJA* 63 (1959) 53-8.

⁹ A. Mozsolicz, "Traditions des steppes à l'âge du bronze en Hongrie," *ArchErt* (1946-48) 63-74. Cf. A. Mozsolicz, "Mors en bois de cerf sur le territoire du bassin des Carpates," *ActaHung* 3 (1954) 69-109. F. Köszei, "Keleti tipusú bronzkori balták a Magyar Nemzeti Múzeumban," *FoliaArch* 9 (1957) 47-60 (English summary: "Bronze Age Axes of Oriental Type in the Hungarian National Museum," 60-62). F. Köszei, "Az oroszvári bronzkori temető," *FoliaArch* 10 (1958) 43-56 (English summary: "The Bronze Age Cemetery at Oroszvár," 57-59).

¹⁰ S. Gallus-T. Horváth, "Un peuple cavalier préscythe en Hongrie," *DissPann* II 9 (1939; quoted infra as Gallus-Horváth 1939). J. Harmatta, "Le problème cimmérien," *ArchErt*, Ser. III, vol. 7-9 (1946-48) 79-132. For Poland and southeast Europe see: T. Sulimierski, "Die thrako-kimmerische Periode in Südstrepolen," *WPZ* 25 (1938) 129-51; F. Holste, "Zur Bedeutung und Zeitstellung der sogenannten 'thrako-kimmerischen' Pferdegeschirrbronzen," *WPZ* 27 (1940; quoted infra as Holste 1940) 7-32; F. Hančar, "Hallstatt-Kaukasus," *MitOstGes für Anthropologie, Ethnologie und Prähistorie* 73/77 (1947) 152-67. As the thorough study of I. Venedikov ("Le mors thrace," *BIA Bulg* 21 [Sofia 1957] 153-96, French summary 197-201) shows, these bits are rare in Bulgaria. But they are frequent in north Caucasus and in the Pontic region. See the careful paper by A. J. Jessen, "K voprosu o pamjatnikakh VIII-VII vv. do n.e. na juge Evropejskoj časti SSSR," *SovArch* 18 (1953; quoted infra as Jessen 1953) 49-110. The latest summary is given by Vl. Milojević in *Germania* 37 (1959) 80-81.

¹¹ G. Kossack, "Pferdegeschirr aus Gräbern der älteren Hallstattzeit Bayerns," *Ib. des Röm.-Germ. Zentralmuseums Mainz* (quoted infra as *JbRGZM*) 1 (1954; quoted infra as Kossack 1954) 111-78.

¹² E. Vogt, "Der Beginn der Hallstattzeit in der Schweiz," *40 JbSchweizGesUrgesch* (1949/50; quoted infra as Vogt 1950) 209-31.

garian and the southeast Alpine groups contain, indeed, more Danubian elements than those of Bohemia and Bavaria. All horse-trapping types used in the Central European area during the period Hallstatt C appeared already in the Late Urnfield Culture of west Hungary (end of the period Hallstatt B).¹⁶

In connection with our specimen from the Agora, we are mainly concerned with the snaffle bits of west Hungary and of the east Alpine region where several good parallels have been unearthed. There is an excellent analogy from grave 27 of the Statzendorf cemetery¹⁷ in Lower Austria. In an urn covered by a cup lay, among other objects, a pair of snaffle bits (on which the position of our hasp on the horse trapping can be observed), a broad flat axe and three iron knives. All these findings may be compared with the corresponding objects of our Agora grave.¹⁸

Similar snaffle bits are known from grave 50 of the Maiersch cemetery¹⁹ in Lower Austria and from Frög²⁰ in Carinthia, but the best examples of the

¹³ G. Kossack, "Zu den Metallbeigaben des Wagengrabes von Cà Morta (Como)," *Sibirum* 3 (1956/57) 41-57, esp. 48-49.

¹⁴ Against the objections of A. A. Jessen (1953) and R. Pittioni (*Urgeschichte des österreichischen Raumes* [Wien 1954] 474ff, and notes 753 and 926), Kossack (1954, 132ff) and Hančar (1956, 142) have convincingly proven that (with the exception of one or two local types) most of the "Thraco-Cimmerian" bridle bits had their origin in the north Caucasian-Pontic region. A. Mozsolicz ("Spätbronzezeitliche durchbrochene Wagenbeschläge," *ActaHung* 7 [1956] 12-14) does not believe that the horse trappings of Zurich-Alpenquai are of Cimmerian or of pre-Scythian origin, but they may have originated in Hungary.

¹⁵ Kossack 1954, 140.

¹⁶ G. Kossack, "Südbayern während der Hallstattzeit," *Röm-GermForsch* 24 (1959; quoted infra as Kossack 1959) 88-89. Cf. Kossack 1954, 140.

¹⁷ A. Dungel, "Die Flachgräber der Hallstattzeit bei Statzendorf in Niederösterreich," *MittPrähKommAkWien* 2 (1924; quoted infra as Dungel 1924) 1-39; see 21-22 and figs. 90-93, 97.

¹⁸ Since the cheekbars are missing from our example, we can use only the mouthpieces for comparisons. Thus the situation is unfavorable. The cheekbars of the Statzendorf grave have their parallels in grave 2 of the "Tschoneggerfranz" in Goldes and in the famous grave of Strettweg in Styria, G. Kossack, "Hallstattzeitliches Pferdegeschirr aus Flavia Solva," *Schild von Steier* 2 (Graz 1953; quoted infra as Kossack 1953) 49-62; see p. 56. Cf. W. Schmid, *Der Kultwagen von Strettweg*, Führer zur Urgeschichte 12 (Leipzig 1934) pl. 6.

¹⁹ Unpublished material in the Höbarth Museum in Horn, Lower Austria. This cemetery will be published by Dr. F. Berg to whom I am grateful for these data.

²⁰ W. Modrijan, "Das hallstattzeitliche Gräberfeld von Frög, Kärnten," *Carinthia* I, vol. 147 (Klagenfurt 1957; quoted infra as Modrijan 1957) 3-42; p. 22, fig. 11:1. I wish to express my sincere gratitude to Dr. W. Modrijan of the Landesmuseum

same type occur in western Hungary. In Somlyó-vásárhely²¹ the horse bits were found along with a broad flat axe; in the area of the brook Sédvíz²² bridle bits, a chisel and a broad flat axe have been discovered. Pécs²³ has similarly yielded an analogy for our specimen. Unfortunately, the circumstances of discovery have not been observed carefully in these finds of western Hungary.

Kossack²⁴ pointed out that there had been a close connection between the warrior graves of the southeast Alpine area (mainly those of Styria) and Bavaria during the Hallstatt Age. Several bits are available for comparison²⁵ from Mindelheim, Maisach-Gernlinden, Fürstenfeldbruck, Gauting and Emmerting-Bruck a.d. Alz. This type—with a slight modification—is considered a characteristic shape of the period Hallstatt C in South Bavaria.²⁶

I have been unable to find close analogies for our snaffle bits in the northwest Balkans.^{26a} Lack of research may be one of the reasons for this. Other items of horse trappings of the "Thraco-Cimmerian" type are known from Bosnia²⁷ (Taline, Osovo, Debelo Brdo, Donja Dolina, Mačkovac), Slovenia²⁸ (St. Veit, Magdalenska Gora, Smarjeta, Stična, Vače), Herzegovina²⁹ and from Greece.³⁰ It should be noted, however, that the absolute chronology of

these parallels is still uncertain, and that many of them seem to belong to a later date than the Agora grave.³¹

THE FLAT AXE WITH LATERAL PROJECTIONS ("ÄRMCHENBEIL") (pl. 95, fig. 1:6)

This type has been very widely spread and has gone through several stages of development. Petrie,³² Dullo,³³ Bittel³⁴ and Rieth³⁵ have dealt with these flat axes in numerous studies.

Dullo³⁶ has distinguished three main types: those of southwest Asia, of north Caucasia and of Europe. The oldest types originated in southwest Asia and in the Aegean around the middle of the second millennium B.C., and they were made, almost without exception, of bronze. The European examples have occurred only since around 800 B.C.,³⁷ and they are generally of iron. Dullo has assumed that they came through Troy and Greece (Dodona) to Europe.

According to Bittel,³⁸ there are two different groups of flat axes, namely the axes of the Hittite Age in several variations and the axes of about the ninth and eighth centuries B.C. These two groups differ from each other not only in their chronological position, but also in their shape. The later ones are to be connected with the European examples

Joanneum in Graz for useful information on the Hallstatt Age material in Styria.

²¹ Gallus-Horváth 1939, pl. 52, figs. 1, 13-14.

²² *ibid.* pl. 60, figs. 1-2, 6 and pl. 61, fig. 1.

²³ *ibid.* pl. 46, fig. 3.

²⁴ Kossack 1953, 51-60. Cf. V. Radimsky und J. Szombathy, "Urgeschichtliche Forschungen in der Umgegend von Wies in Mittelsteiermark II," *MittAnthrGesWien* 15 (1885; quoted infra as Radimsky-Szombathy 1885) 117-68. See pp. 122, 124-25 and 129ff.

²⁵ Kossack 1959, pl. 23:4 (with false twisting); pl. 60:1; pl. 62:4, 11-12; pl. 88: 4-5; pl. 119:38. Some of these examples are of bronze.

²⁶ Kossack 1959, pl. 13:8.

^{26a} In the Marchesetti Collection of the *Museo Civico di Storia ed Arte* in Trieste, there are several fragments of horse-trappings. We reproduce here two mouthpieces from San Canziano (Škocjan). Both of them (pl. 95, fig. 1:11-12) belong to bronze bridle bits. Unfortunately, the circumstances of their discovery are not known. However, they may be assigned probably to the same chronological level as the hoard from San Canziano (cf. our footnotes 89, 103 and 114). In this case, we could place them in the second half of the period Hallstatt B (in Reinecke's scheme).

The author is grateful to Prof. Dr. Silvio Rutteri, Director of the *Museo Civico di Storia ed Arte* in Trieste, for permission to publish these two bits.

²⁷ Kossack 1954, 158-59. Cf. F. Maier, "Zu einigen bosnisch-herzegowinischen Bronzen in Griechenland," *Germania* 34 (1956, quoted infra as Maier 1956), 63-75, and A. Benac-B. Čović, *Glasinac II. Katalog der Vorgeschichtlichen Sammlung des Landesmuseums in Sarajevo*, Heft 2 (1957), quoted infra

as Benac-Čović 1957). The findings mentioned here come from very old excavations, and the circumstances of discovery are mostly unknown. They offer little for an exact dating. Some of them are certainly of a later period.

²⁸ Kossack 1954, 159-61, and F. Starčević, "Vače," *Arheološki Catalogi Slovenije*, vol. I (Ljubljana 1955; quoted infra as Starčević 1955) pl. 40:1-9.

²⁹ Kossack 1954, 159, Nr. 6.

³⁰ Maier 1956, 66-67; Holste 1940, 27; Miloščić 1959, 81.

³¹ The same is true of the horse-trappings of the so-called Vekerzug-type (Kossack 1954, 157, type D). Cf. M. Párducz, "Le cimetière hallstattien de Szentes-Vekerzug," *ActaHung* 2 (1952) 143-69; 4 (1954) 25-89; 6 (1955) 1-18. A distribution map of 70 sites of the Vekerzug-group is given in *ActaHung* 2 (1954) 55. Schandorf, Oberpullendorf (both of them in Burgenland, Austria), Vače, Brezje and Donja Dolina are mentioned from the southeast Alpine and northwest Balkan region. The Vekerzug group is dated between the periods Hallstatt C and Latène B (*ActaHung* 6 [1955] 14-17).

³² W. M. Flinders Petrie, *Tools and Weapons Illustrated by the Egyptian Collection in University College, London, and 2000 Outlines from Other Sources* (London 1917, quoted infra as Petrie 1917) 17-18 and pl. 18.

³³ E. Dullo, "Die kaukasischen Äxte der Bronzezeit," *PZ* 27 (Berlin, 1936; quoted infra as Dullo 1936) 66-172. See 86-98.

³⁴ K. Bittel, "Kleinasiatische Studien," *Istanbuler Mitt* 5 (Istanbul 1942; quoted infra as Bittel 1942) 54-66.

³⁵ A. Rieth, "Die Eisenstechnik der Hallstattzeit," *Mannus-Bücherei* 70 (Leipzig 1942; quoted infra as Rieth 1942) 18-23.

³⁶ Dullo 1936, 88 and 96-97.

³⁷ *ibid.* 96-97.

³⁸ Bittel 1942, 61-62. Cf. *AA* (1944/45) 44-46.

(with those in the east Alpine region, in Moravia, Silesia, in the Danubian Basin and in the Balkans). While there seems to be no doubt that the axes of the older group have developed in southwest Asia,³⁹ Bittel has thought it possible that the later specimens were brought back from Europe to southwest Asia.⁴⁰

Rieth, who has presented a clearly arranged survey of the flat axes, has divided them into three groups,⁴¹ and made a sharp distinction between the earlier and the later bronze axes on the one side, and between the later bronze and the iron examples on the other. In agreement with Dullo and Bittel, he has considered southwest Asia as the homeland of the bronze specimens and has emphasized their role in the Late Bronze Age of Italy. By means of trade, some bronze axes may have reached southern Hungary and gone up to the east Alpine region. Their translation into iron may have taken place somewhere there. On the distribution map of the bronze flat axes published by Rieth we find the following sites: Troy, Settlement VII⁴² (mold for a flat axe), Lindos (Rhodes), Dodona (Thessaly), Sicily (Modica and Caltanissetta-Piazza, Armerina), Sardinia (Abini and Monte San Ida), Italy (Pozzuoli and Monte Rovello) and Kisköszeg (formerly Hungary, now Yugoslavia). Thus we have to do with an east Mediterranean type which found its way to Central Europe.⁴³ The northernmost example is known from Kisköszeg between

³⁹ Stefan Przeworski, "Der Grottenfund von Ordu," *AO* 7 (1935) 390-414; 8 (1936) 49-68. See vol. 8, pp. 55ff and Dullo 1936, 97.

⁴⁰ Bittel 1942, 61.

⁴¹ Rieth 1942, 18-23. Distribution map on p. 20.

⁴² Blegen, Boulter, Caskey, Rawson, *Troy IV*, pt. 1 (Princeton 1958) 144-45.

⁴³ Cf. A. M. Tallgren, "Die kupfernen Flachäxte mit seitlichen Zapfen," *Suomen Muinasmuistoyhdistyksen Aikakauskirja* 26 (Helsinki 1912) 21-28; 27.

⁴⁴ Unpublished material, Wien, Naturhistorisches Museum, Inv. Nr. 38.504. Unfortunately, the exact place and circumstances of finding are not recorded. Thanks are due to Dr. K. Kromer, head of the Division of Prehistory, Naturhistorisches Museum, for permission to publish and for his assistance.

⁴⁵ Petrie 1917, pl. xviii:107-09, 112 and Rieth 1942, 21, fig. 12:2-5.

⁴⁶ The author wishes to express his indebtedness to Dr. Alojz Benac for information concerning Bosnia, Herzegovina and Dalmatia; to Dr. Stane Gabrovec of the Narodni Muzej, Ljubljana for important data in connection with Slovenia, and to Dr. Zdenko Vinski of the Zagreb University for information on Croatia.

⁴⁷ J. Posedel, "Ein prähistorisches Gräberfeld bei Stagno," *Wissenschaftliche Mitteilungen aus Bosnien und der Hercegovina* (quoted infra as *WMBH*) 11 (1909) 101-03 and pl. xx:5.

⁴⁸ F. Fiala, "Die Ergebnisse der Untersuchung prähistorischer

the Danube and the Drava. It is of some significance that an iron flat axe was also found at the same site.⁴⁴ This indicates that the translation of this type from bronze into iron took place somewhere in this region, as Rieth had assumed long ago. The butt of the Kisköszeg bronze axe is not flat,⁴⁵ but convexly rounded. Most of the iron examples of the northwest Balkan and the east Alpine area have the same round butt, that is they show a further developed phase of evolution.

The iron flat axe is a leading type of the Eastern Hallstatt Culture. Its main distribution-area is the later Roman province of Noricum and the neighboring territory: Upper and Lower Austria, western Hungary, Styria, Carinthia, Slovenia and Bosnia. From this center, it spread to Czechoslovakia, Germany, Poland, Ukraine and Rumania in the north and east, and to north Italy in the west.

The nearest specimens of this type outside of Athens are known from Yugoslavia.⁴⁶ There, at Ston (Stagno) in Dalmatia⁴⁷ and at three sites (Ilijak,⁴⁸ Sanskimost⁴⁹ and Mahrevići⁵⁰) in Bosnia-Herzegovina similar iron axes were found; the great tumulus cemeteries of Slovenia have yielded several more examples: Luterče Selo near Novo Mesto,⁵¹ Šmarjeta near Novo Mesto,⁵² Vače,⁵³ Rifnik,⁵⁴ Stična and Magdalenska Gora.⁵⁵ In many cases, the circumstances of discovery are not known. Therefore, the assignment to a certain chronological phase is rather difficult.

⁴⁴ Grabhügel auf dem Glasinac im Jahre 1893," *WMBH* 3 (1895) 3-38; 11-12 and fig. 26. Cf. Benac-Cović 1957, 99 and pl. xvii:2. G. v. Merhart, "Geschürzte Schienen," 37/38 *RKGOMM* (1956-57, Berlin 1958; quoted infra as Merhart 1958) 91-147. See 93-94, 107-12 and 135-37.

⁴⁵ Franz Fiala, "Das Flachgräberfeld und die prähistorische Ansiedlung in Sanskimost," *WMBH* 6 (1899) 62-128; p. 66 and figs. 8-12.

⁴⁶ C. Truhelka, "Ein Tumulus der La-Tène-Periode in Mahrevići (Bez. Čajnica)," *WMBH* 12 (1912) 12-28; p. 18, fig. 5 and p. 20.

⁴⁷ Narodni Muzej, Ljubljana, Inv. Nr. P 4516. The axe was found in a grave. Circumstances of discovery are unknown.

⁴⁸ Narodni Muzej, Ljubljana. Inv. Nr. P 5025, found in a grave. Circumstances of finding are not recorded.

⁴⁹ Naturhistorisches Museum, Wien. Inv. Nr. 8007. Information received from Dr. K. Kromer.

⁵⁰ *Arheološki Vestnik* 7 (Ljubljana 1956) pl. xviii:555.

⁵¹ Narodni Muzej, Ljubljana. Inv. Nr. 6770. c. Tumulus IV, Grave 43. Mahr who published this grave ("Zu den sogenannten prähistorischen Steigeisen," *Suomen Muinasmuistoyhdistyksen Aikakauskirja* 39:2 [Helsinki 1934] 3-29; p. 6) did not mention this axe. According to information furnished by Dr. Stane Gabrovec, Narodni Muzej, Ljubljana, an iron flat axe was found in a tumulus grave of the period Hallstatt C during the excavations near Stična in 1960.

The finds of Ilijak and of Ston are dated in the period between 800 and 650 B.C.⁵⁶ or even later.⁵⁷ The axe of Sanskimost is later⁵⁸: it shows a more developed shape. However, the region of Bosnia and Herzegovina is a territory of retardation.⁵⁹ The specimens of Slovenia are probably older, but we have only insufficient data about their exact age. On the other hand, there is plenty of evidence—as we shall see later—that iron-working started at an earlier date in the northwest Balkan area⁶⁰ than in Bosnia-Herzegovina.

The iron flat axes occur in abundance in Austria. They appear in Carinthia⁶¹ and Styria⁶² as well as in the famous cemetery of Hallstatt⁶³ in Upper Austria.⁶⁴ In Hallstatt alone, they have been uncovered in fifteen graves, along with Hallstatt swords, spears, knives, whetstones, etc. This type is known from a great number of sites in Lower Austria (Statendorf,⁶⁵ Feichtenboden near Fischau,⁶⁶ Malleiten near Fischau⁶⁷ and Kalenderberg).⁶⁸ It was associated with spears, knives and, in one case, with a pair of

⁵⁶ Merhart 1958, 136. Merhart deals only with the graves of Ilijak.

⁵⁷ Benac-Čović 1957, 99. In Ilijak and Ston, the flat axes were found along with bronze greaves.

⁵⁸ Benac-Čović 1957, 99. ⁵⁹ *ibid.* 87.

⁶⁰ Staré 1955, 70. Cf. Kossack 1959, 56. Iron was already produced at Vače in the period Hallstatt B (in Reinecke's scheme). The finds of Rifnik belong mostly to the same period.

⁶¹ Modrijan 1957, 16 and fig. 10:7. Pittioni 1954, 632.

⁶² Radimsky-Szombathy 1885, 157; Goldes, Grell- and Ofenmacher-Wald, Tumulus 22, and p. 164; Mantrach, Tumulus 27 (with two spearheads and one knife). Cf. J. Szombathy, "Urgeschichtliche Forschungen in der Umgegend von Wies in Mittelsteiermark. IV," *MittAnthrGesWien* 20 (1890) 170-96; p. 178. Pittioni 1954, 612-13.

⁶³ K. Kromer, "Gedanken über den sozialen Aufbau der Bevölkerung auf dem Salzberg bei Hallstatt, Oberösterreich," *Archaeologia Austriaca* 24 (1958; quoted infra as Kromer 1958) 39-58; p. 49. Cf. K. Kromer, *Das Gräberfeld von Hallstatt* (Firenze 1959; quoted infra as Kromer 1959).

⁶⁴ Another Upper Austrian site yielding an iron axe is Donaustrudel bei Grein (Naturhistorisches Museum, Wien, Inv. Nr. 13.910). As to Upper Austria cf. Pittioni 1954, 545.

⁶⁵ Dungel 1924, 21 and 27; Grave 27 and Grave 36. Rieth 1942, 18. Pittioni 1954, 575; fig. 404 and p. 580.

⁶⁶ J. Szombathy, "Die Tumuli im Feichtenboden bei Fischau am Steinfeld," *MittAnthrGesWien* (1924) 163-97. See p. 171; Tumulus 7 and fig. 11; p. 182.

⁶⁷ Niederösterreichisches Landesmuseum, Wien (Inv.Nr. 10.559 a-b). Information received from Dr. Franz Hampl.

⁶⁸ G. Kyrle, "Prähistorische Keramik vom Kalenderberg bei Mödling (N.Ö.)," *JbAltertumskunde* 6 (Wien 1912) 221-66; p. 225.

⁶⁹ Kromer 1958, 45 and 49; Kromer 1959, 28. Cf. G. V. Merhart, "Blechgefäß und Chronologie der Spätbronze- und Früheisenzeit Mitteleuropas," *Actes de la III^e Session Zurich 1950, Congrès International des Sciences Préhistoriques et Protohistoriques* (Zurich 1953; quoted infra as Merhart 1953) 212-16;

bridle bits. The complex of these types is characteristic of the level Hallstatt C in Austria and it has recently been dated approximately between 800 and 600 B.C.⁶⁹

Many of these iron axes are concentrated in Hungary.⁷⁰ Beside the example of Kiskőszeg (now in Yugoslavia), Gallus⁷¹ has mentioned four others from Western Hungary and two from the northeastern parts of that country. Similar types are known from Lengyel,⁷² Kismező,⁷³ Sághegy,⁷⁴ and also from an unknown site in Hungary.⁷⁵ Most of these specimens are found in association with "Thraco-Cimmerian" findings or with material typical of the horizon Hallstatt C, but the circumstances of finding are frequently not recorded. Willvonseder⁷⁶ and Holste⁷⁷ have already considered these iron axes to be close to the "Thraco-Cimmerian" group.

In Czechoslovakia⁷⁸ the same type has been unearthed at five localities, and not less than ten similar findings are reported from the Oder region.⁷⁹ Three such sites have been discovered in Rumania⁸⁰ and

p. 216. A long chronology is suggested by Vl. Milojčić, "Einige mitteleuropäische Fremdlinge auf Kreta," *JbRGZM* 2 (1955) 153-69; 168-69. But Kossack 1959, 56 assigned the beginning of Hallstatt C to the second half of the eighth century B.C.

⁷⁰ I wish to express special appreciation to Dr. M. Párducz of the Hungarian National Museum in Budapest, to Dr. F. Kőszegi of the Museum in Vác, to Dr. A. Uzsoki of the Xánthos Museum in Györ and to Mrs. Éva F. Petres of the Museum in Székesfehérvár for useful information concerning Hungary.

⁷¹ Gallus-Horváth 1939, pl. 52:1: Somlyóvásárhely; pl. 60:6; Sédvíz (along with bridle bits and spearheads); pl. 63:3; Doba (with long sword, bridle bits and spearheads); pl. 65:5; Nagybarát; pl. 67:15; Diósgyőr and pl. 70:4; Gyöngyrő.

⁷² M. Wosiński, *Das prähistorische Schanzwerk von Lengyel* II (Budapest 1890) pl. 44:344-45.

⁷³ ArchErs 78 (1951) 40 and pl. xxix:e.

⁷⁴ *ibid.*

⁷⁵ Hungarian National Museum, Budapest, Inv. Nr. 60.1951, 21.

⁷⁶ WPZ 19 (1932) 34-36.

⁷⁷ Holste 1940, 31.

⁷⁸ A good list and distribution map of the examples in Czechoslovakia is to be found in: B. Kostrzewski, "Znaczenie Odry w pradziejach" ("Le rôle de l'Odra aux temps préhistoriques"), *Przegląd Archeologiczny* 8 (Poznań 1949; quoted infra as Kostrzewski 1949) 248-99. See p. 264, map 16 and p. 291: Siekierki zelazne z bocznymi wyrostkami; Nr. 1: Biskupství; Nr. 3: Bytí Skála; Nr. 9: Niznia Mysl'á; Nr. 10: Planany and Nr. 11: Smolenice.

⁷⁹ Kostrzewski 1949, 264, map 16 and pp. 291-92: list of distribution. Nos 2, 4-8, 12-15.

⁸⁰ R. Vulpe, "Santerul archeologic Popesti (reg. Bucuresti, r. Mihailesti)," *Materiale și Cercetări Archeologice* 3 (1957) 227-46; 239, fig. 19. M. Petrescu-Dimbovița, "Objets hallstattiens trouvés à Birlad," *Dacia* N.S. 2 (1958; quoted infra as Petrescu-Dimbovița 1958) 59-67; 63, fig. 4. According to information received from Dr. Petrescu-Dimbovița, a similar iron axe has been discovered in Ferigele (Little Walachia, Oltenia) and will be published soon.

one in Ukraine.⁸¹ These sites date again from the eighth and seventh centuries B.C.⁸²

To the west of Hallstatt this type is very rare. Kersten published an example from Gelbenburg near Dittenheim, district of Gunzenhausen in Bavaria.⁸³ Late forms of these iron axes are represented in north Italy:⁸⁴ in Sanzeno, Crescino, and Appiano-Eppan.

These implements seem to be foreign to Greece. Blegen has compared our specimen to a similar iron axe of Late Protogeometric times from Grave 40 of the Kerameikos cemetery.⁸⁵ Both Greek examples point to an early phase. Their butts are flat and almost straight. They must be placed at the beginning of the evolution of these tools. We will discuss their chronological position later.

THE SPEARHEADS (pl. 95, fig. 1:2-3)

The early iron spearheads have been little studied in Greece. Chronologically, they are less characteristic than the implements treated above. In many cases they have been found in very bad condition and cannot be used for comparisons. As Lorimer has pointed out, their bronze prototypes were derived from Crete.⁸⁶ Blegen has enumerated the nearest analogies⁸⁷ to our iron specimens from the Protogeometric graves of the Kerameikos, and Desborough⁸⁸ has published the list of all Protogeometric iron spears known in 1952.

These studies, however, did not refer to the connections between Greece and Central Europe. In the Late Urnfield Culture (period Hallstatt B in Reinecke's scheme) of Istria⁸⁹ and Czechoslovakia⁹⁰

some iron spearheads have occurred. In the so-called "Fliegenhöhle" near Dane, ten iron spearheads were found beside 220 bronze spearheads. The hoard of Hostomice contained a pair of iron spearheads associated with antenna-sword, knives and some other implements of bronze.

In the period Hallstatt C the iron spears were spread in the northwest Balkan region and in Central Europe. Close parallels to our specimens were unearthed in Styria.⁹¹ The cemetery of Statzendorf⁹² also yielded a pair of iron spearheads. At Hallstatt⁹³ at least fourteen early graves contained a pair of iron spears; in one of the graves there were three spears. In the tumulus graves of the Glasinac, the spearheads occur frequently. They are present in the earliest graves of phase IV which are dated in the period 800 and 750,⁹⁴ and indeed in many graves of the later phases. As Truhelka⁹⁵ has reported, no less than ten iron spearheads lay in a warrior's grave at Podpécine.

In Vače, the findings were not separated according to the graves, but twenty spears were recorded on the basis of typological classification.⁹⁶ Some of them⁹⁷ may be compared with the Agora specimens.

As Miss Lorimer has indicated,⁹⁸ one thrusting spear and a sword were the most important weapons of the Greek warrior until the beginning of the Geometric Age, and this means that close-range fighting continued to prevail. However, during the Geometric Age there was a change, at least in certain areas. The remains of a pair of spears (or sometimes three) appeared in later graves. It is clear that the traditional method of fighting was aban-

⁸¹ A. Terenojkine, *SovArk* 2 (Moscow 1957) 54, fig. 4:6.

⁸² Petrescu-Dimbovita, 1958, 66.

⁸³ W. Kersten, "Der Beginn der La-Tène-Zeit in Nordostbayern," *PZ* 24 (Berlin 1933) 96-174; p. 99.

⁸⁴ G. Merhart, "La Tène-Funde aus Tirol," *WPZ* 13 (1926) 65-81; 77, fig. 2:8. G. Fogolari, "Sanzeno nell'Anaunia," *Civiltà del Ferro* (Bologna 1960) 265-321; 313, figs. 1-3. The example of Crescino (Museo Nazionale, Trento, Inv. Nr. 3279) represents the same type as those of Sanzeno. Another iron flat axe was excavated in Appiano-Eppan. It is exhibited in the *Museo Civico* in Bolzano-Bozen.

⁸⁵ Blegen 1952, 287. Cf. K. Kübler, *Kerameikos IV: Neufunde aus der Nekropole des 11. und 10. Jahrhunderts* (Berlin 1943) 42 and pl. 38.

⁸⁶ H. L. Lorimer, *Homer and the Monuments* (London 1950) (quoted infra as Lorimer 1950) 254f.

⁸⁷ Blegen 1952, 286.

⁸⁸ V. R. d'A. Desborough, *Protogeometric Pottery* (Oxford 1952) (quoted infra as Desborough 1952) 312. Cf. S. Benton, "Further Excavations at Aetos," *BSA* 48 (1953) 255-358; 345.

⁸⁹ J. Szombathy, "Altertumsfunde aus Höhlen bei St. Kanian im österreichischen Küstenlande," *MittPrähKommAk Wien* 2

(1924; quoted infra as Szombathy 1924) 127-90; 134f and figs. 41-45.

⁹⁰ Rieth 1942, 34, fig. 22:3.

⁹¹ Radimsky-Szombathy 1885, 122; Gleinstetten, Forstwald, Tumulus 21 (2 spearheads, knife, horse trappings of iron, bronze implements, whetstone and 28 clay vessels); p. 125: Goldes, Tschoneggerwald, Tumulus 51 (iron spearhead, parts of iron horse trappings and 28 clay vessels). Cf. Pittioni 1954, 613: fig. 433.

⁹² Dungel 1924, grave 13 a. Cf. Rieth 1942, 19, fig. 10:12.

⁹³ Rieth 1942, 34-35. For further details see Kromer 1959.

⁹⁴ Benac-Čović 1957, 65 (Ilijak: Tumulus 20, Grave 1, and Gosinja planina: Tumulus 26, Grave 2); 90 and pl. 3:9, 11; pl. 4:8, 12. For chronology, *ibid.* 117.

⁹⁵ WMBH 1 (1893) 74. Unfortunately, the chronology of this grave is uncertain because Truhelka did not describe its content.

⁹⁶ Staré 1955, 76-77.

⁹⁷ Staré 1955, pl. 8:2; pl. 9:1; pl. 10:3; pl. 11:1-3. Concerning their chronology we have no precise data, but in Vače ironworking was established very early.

⁹⁸ Lorimer 1950, 256-58.

doned and the throwing of spears came into use. There is no doubt that our spears were throwing spears.

THE SWORD (pl. 95, fig. 1:1)

Blegen⁹⁹ found the best analogies to our long sword in the Protogeometric graves of the Kerameikos cemetery where four similar blades were unearthed. The development of the iron swords in Greece from the end of Late Helladic III to the end of the Geometric Age was discussed by Miss Lorimer,¹⁰⁰ and Desborough¹⁰¹ presented a list of the Protogeometric examples from Attica, Thessaly, Laconia and Crete.

As Rieth has shown,¹⁰² there are close relations between the iron swords of Greece and of southeastern Central Europe. The sword of St. Kanzian (Škocjan, now Yugoslavia)¹⁰³ of the Late Urnfield Culture (Hallstatt B in Reinecke's scheme) may be compared with those of the Protogeometric and Early Geometric Ages in Greece. It is worth noting that Merhart¹⁰⁴ and Srockhoff¹⁰⁵ referred to the southeastern Alps and the northwestern parts of the Balkans as the center of early iron-working, from which region iron swords—or at least iron sword blades—spread over wide territories: Bulgaria, Macedonia,¹⁰⁶ Yugoslavia, north Italy, Switzerland,¹⁰⁷ Germany, Czechoslovakia¹⁰⁸ and west Hungary.

It is well-known that the long iron sword¹⁰⁹ later became a characteristic type of the early Hallstatt Culture in Central Europe. This type appears also in Bosnia.¹¹⁰ It is interesting to mention that the

rite of sword bending in burials¹¹¹ was known in certain regions of Central Europe and in Bosnia. The same custom has been observed in our Agora grave and in Grave 28 of the Kerameikos cemetery.¹¹²

THE KNIVES (pl. 95, fig. 1:4-5)

Blegen¹¹³ has already mentioned that iron knives do not occur frequently in the Protogeometric and early Geometric graves of the Agora or of the Kerameikos. He did not cite any good parallel to our knives with convex cutting edge and slightly concave back. The iron knives of the period in question have their best analogies in the contemporary examples of Central Europe. In its shape a knife blade of St. Kanzian¹¹⁴ appears to be similar to our specimens, but it is made of bronze. However it was found together with iron spearheads and iron sword. The knife of St. Kanzian belongs to the Late Urnfield Culture (Hallstatt B). An iron knife with convex back and convex cutting edge comes from the Statzendorf cemetery¹¹⁵ and can be assigned to the early Hallstatt Culture of the east Alpine region.

The analogies mentioned by Blegen have concave cutting edges and convex backs. This curved type became popular during the period Hallstatt C in the eastern Hallstatt area and in the northwest Balkans. It is unnecessary to mention all places where they appear, and a few sites from Yugoslavia (Vače,¹¹⁶ Glasinac¹¹⁷), Austria (Hallstatt,¹¹⁸ St. Andrä a.d. Traisen,¹¹⁹ Statzendorf,¹²⁰ Röschitz,¹²¹ Vilach-Kanzianberg),¹²² western Hungary¹²³ and else-

⁹⁹ Blegen 1952, 286. Cf. W. Kraiker-K. Kübler, *Kerameikos I*, 173-74.

¹⁰⁰ Lorimer 1950, 267-70.

¹⁰¹ Desborough 1952, 311.

¹⁰² Rieth 1942, 124-28 and 136-37.

¹⁰³ Szombathy 1924, 148: fig. 92. Cf. *Germania* 23 (1939) 22.

¹⁰⁴ G. v. Merhart, "Studien über einige Gattungen von Bronzegefäßen," *Festschrift des RömGermZentralmuseums Mainz* 1952, 2 (Mainz 1952) 1-71 (quoted infra as Merhart 1952); 39, note 116: a list of early iron swords and of swords with iron blade and bronze handle.

¹⁰⁵ E. Srockhoff, "Seddin-Serajewo," *Antidoron Michaeli Abramii septuagenario oblatum a collegis et amicis* (Split 1954-57; quoted infra as Srockhoff 1957) 16-47; 42.

¹⁰⁶ Stanley Casson, *Macedonia, Thrace and Illyria* (Oxford 1926; quoted infra as Casson 1926) fig. 50 and pp. 145-47.

¹⁰⁷ Vogt 1950, 214 and 216.

¹⁰⁸ J. Hrala, "K datování českých nálezů mečů auvernierského typu," *Památky Archeologické* 49 (Prague 1958; quoted infra as Hrala 1958) 412-21.

¹⁰⁹ Pittioni 1954, 544 and 592; Kossack 1959, 38; Gallus-Horváth 1939, pl. LXI:4 and LXII:5; M. Šolle, "Jižní Morava v době halštatské" *Památky Archeologické* 46 (1955) 101-29.

¹¹⁰ G. Kossack, "Zur Hallstattzeit in Bayern," *Bayerische Vorgeschichtsblätter* 20 (München 1954; quoted infra as Kossack 1954 b) 1-42; p. 14 and fig. 3:1. Cf. Benac-Cović 1957, 98.

¹¹¹ J. Déchelette, *Manuel d'archéologie préhistorique celtique et gallo-romaine*, second edition, vol. III (Paris 1927) 218. Benac-Cović 1957, 98.

¹¹² *Kerameikos IV*, 34-35.

¹¹³ Blegen 1952, 287. Cf. Desborough 1952, 311-12 for other iron knives from Kos and Crete, the Cyclades, the Sporades, Rhodes, Caria, Thessaly and Argolid.

¹¹⁴ Szombathy 1924, 155 and fig. 127.

¹¹⁵ Dungel 1924, 21 and fig. 92; Rieth 1942, 19 and fig. 10:11.

¹¹⁶ Staré 1955, pls. III-VI.

¹¹⁷ Benac-Cović 1957, pl. III:10; pl. IV:9, 11; pl. VIII:17-18.

¹¹⁸ Kromer 1958, 50. ¹¹⁹ Pittioni 1954, fig. 405:12.

¹²⁰ Rieth 1942, 19.

¹²¹ Pittioni 1954, fig. 423:15.

¹²² Pittioni 1954, fig. 444:17-18.

¹²³ L. Nagy, "Das frühisenzeitliche Gräberfeld von Pusztaközéprépás," *Folia Arch* 1-2 (Budapest 1939) 53-57 and fig. 5:16. I. Lengyel, "Le cimetière du premier âge du fer de Halimba," *Archéf* 86 (1959) 159-69; pl. XLIII:7-8; pl. XLIV:3, 10-11; pl. XLVI:8; pl. XLVIII:9.

where in Central Europe¹²⁴ should suffice in this connection. Kromer has observed in the Hallstatt cemetery¹²⁵ that knives of this type and whetstones often belong to the outfit of the warrior equipped with sword. The same is true of our Agora grave, and in the whole East Hallstatt region.

It is to be noted that whetstones appear in great number in the contemporary graves of northwest Yugoslavia, for instance in Váč¹²⁶ and on the Glasinac.¹²⁷ Benac and Čović called our attention to the fact that these objects show—at least in certain cases—little sign of use, although their material is adapted for sharpening. In the so-called princely graves they were probably ornamental objects and their possession reflected the greatness and power of their owners. They are sometimes referred to as "scepters." And the scepter of the Mycenaean kings was the materialization of the abstract idea of power.¹²⁸ Use of the whetstone as an emblem of power during the pagan Anglo-Saxon period of the seventh century A.D. is attested by the Sutton-Hoo ship-burial¹²⁹ in Suffolk. Our whetstone was certainly no ornament, but the great number of iron tools and weapons suggests a high social position of the warrior buried in Grave XXVII of the Agora.

The other objects from this grave—a fragmentary pin, a small chisel (pl. 95, fig. 1:7) and two bone rings—are of no significance for dating or for comparisons. Therefore we omit their detailed discussion here.

THE EARLIEST IRON-WORKING IN GREECE. CULTURAL INTERRELATIONS BETWEEN ATHENS AND CENTRAL EUROPE

Archaeologists and metallurgists generally agree that the earliest smelted iron appeared in the Near East.¹³⁰ While the iron objects were very rare in the

third millennium B.C., they were found in considerably greater quantity during the first half of the second millennium, and iron became well established towards the end of the second millennium, at least in certain areas of the Near East.

According to Forbes,¹³¹ there is no doubt that iron was a foreign metal in the early Aegean. In Cyprus¹³² there are iron deposits near Soli, Paphos and Tamassos, and many traces of ancient mines have been found. The constant contacts with Anatolia introduced iron working to this island. But there are no notable deposits in Crete.¹³³ In Forbes' view,¹³⁴ all Greek legends about iron-working demons or heroes in Crete are probably without a real foundation. These myths are based on the confusion of the Cretan and the Phrygian Mount Ida. It seems that these legends were originally told about the Phrygian mountains or other sites in Asia Minor where, indeed, a very early iron industry flourished.

The early Greeks¹³⁵ of the mainland were not eminent in iron metallurgy. They imported their iron mostly in semi-finished condition. They may have obtained some iron locally; ore occurs in Boeotia, Attica, Laconia¹³⁶ and some of the islands.¹³⁷ It is certain that much iron was imported from Elba and Etruria and, as we shall see, from the area of the later Roman province of Noricum.

The Homeric poems do not mention iron mining.¹³⁸ The metal had its place in the treasures of the heroes, therefore it was not plentiful. The Greeks of the epics were seemingly without the knowledge of production method.¹³⁹ It appears that in Homer's day iron was not yet the trusted material for weapons.¹⁴⁰

On the basis of the archaeological record we can

¹²⁴ Rieth 1942, 31-32 and fig. 20.

¹²⁵ Kromer 1958, 50.

¹²⁶ Staré 1955, 112 and pl. LXXVIII.

¹²⁷ Benac-Čović 1957, 95.

¹²⁸ A. Alföldi, "Hásta—Summa Imperii," *AJA* 63 (1959) 1-27; 14-16.

¹²⁹ "The Sutton Hoo Ship-Burial," *Antiquity* 14, Nr. 53 (March 1940) 1-87. See p. 15 and pl. III. I am grateful to Prof. A. Alföldi for this reference.

¹³⁰ W. Witter, "Über die Herkunft des Eisens," *Mannus* 34 (1942; quoted infra as Witter 1942) 7-83; p. 59 and table after p. 80. R. J. Forbes, *Metallurgy in Antiquity* (Leiden 1950; quoted infra as Forbes 1950) 417f. H. H. Coglan, "Notes on Prehistoric and Early Iron in the Old World," *Occasional Papers on Technology* 8 (Pitt Rivers Museum, Oxford 1956; quoted infra as Coglan 1956) 61-64 and 71.

¹³¹ Forbes 1950, 456.

¹³² Forbes 1950, 385 and 456. Cf. Lorimer 1950, 117.

¹³³ Forbes 1950, 385. Coglan 1956, 64. D. H. F. Gray,

"Metal-Working in Homer," *JHS* 74 (1954) 1-15; p. 11.

¹³⁴ Forbes 1950, 385.

¹³⁵ *ibid.* 458. See also O. Davies, "The Chemical Composition of Archaic Greek Bronze," *BSA* 35 (1934/35) 131-37; 136.

¹³⁶ Forbes (1950, 459) believes that Laconia did not begin industrial production before 550 B.C.

¹³⁷ Forbes 1950, 386 mentions Syros, Cythnos, Seriphos, Siphnos, and Gyaros where an excellent iron ore, chromite, occurs. But we do not know if this was used in antiquity. Other deposits are known from Andros, Skyros, Samothrakē, Samos, Rhodes and Cos.

¹³⁸ Carl Roebuck, *Ionian Trade and Colonization*, Monographs on Archaeology and Fine Arts 9 (New York 1959) 102.

¹³⁹ H. G. Richardson, "Iron, Prehistoric and Recent," *AJA* 38 (1934; quoted infra as Richardson 1934) 555-83; 569.

¹⁴⁰ T. A. Rickard, "The Primitive Smelting of Iron," *AJA* 43 (1939; quoted infra as Rickard 1939) 85-101; p. 85. Cf. T. B. L. Webster, *From Mycenae to Homer* (New York 1959) 166, and Lorimer 1950, 117-21.

piece together a brief history of early iron in Crete and the Greek mainland until the Geometric period. Coghlan and Forbes mention¹⁴¹ early finds of low-nickel meteoric iron from a Tholos near Platano and from Mavro Spelio. A cube of iron discovered at Knossos in a Middle Minoan grave (from about 1800 B.C.) is likely to be of meteoric iron. An iron finger-ring found at Pylos in the Peloponnesus (probably from 1550 B.C.) seems to be of the same origin.¹⁴²

The first evidence of man-made iron in Crete is a slag derived from the reduction of oxidized ores at the great Tholos of Hagia Triada.¹⁴³ An important class¹⁴⁴ of prehistoric iron objects are the finger-rings mostly found in Mycenaean graves and built up of successive layers of different metals. A ring from Phaestos has a bronze core overlaid with gold for one-half of the circle and with iron for the other. Three metal rings found at Dendra by Persson are composed of iron, copper, lead and silver. These rings and their parallels can be dated from 1500 to 1200 B.C. A list of the iron objects of the Bronze Age from Minoan or Mycenaean sites is presented by Miss Lorimer.¹⁴⁵ However, as Richardson and Wainwright rightly state,¹⁴⁶ rings, amulets and beads do not mark the beginning of the Iron Age. Only when iron tools and weapons appear and when their number tends to increase, does the production of iron really begin. The transition from copper- and bronze-working technique to the production of iron was not "easy."¹⁴⁷ The craft of the blacksmith is entirely different from that of the copper-worker. The iron-working "is coupled with its typical furnaces, bellows and apparatus, tongs, crucibles, etc.; the arts of hardening, carburizing, annealing, quenching, and tempering are new acquisitions of several generations of smiths" (Forbes).¹⁴⁸

Though the earliest iron working on the Greek

mainland¹⁴⁹ dates from the end of the second millennium B.C. (slags of Vardarofsa C), iron first came into use for weapons during the Protogeometric Period around 900 B.C.¹⁵⁰ and still later. A good, but not complete, list of Protogeometric iron objects is to be found in Desborough's important work.¹⁵¹ In the Geometric Period iron became more and more common in Greece. It is worthwhile to mention that, according to Forbes,¹⁵² iron was possibly smelted at Tiryns,¹⁵³ Athens and in Laconia from the tenth century B.C. on.

As mentioned above, the best and by far the greater proportion of Greek iron was imported from outside. But whence did it come to Athens?

There is reason to believe that the largest part of the Athenian iron was acquired from the north, i.e. from the northwest Balkans and from the territory of the later Roman province of Noricum. In that area good iron ores were abundant. It is of great importance to note that—among other ores—the spathic,¹⁵⁴ the ore best adapted to the groping technique of early iron metallurgy, occurred in great quantity in Styria, Carinthia, in the Carpathian Basin, and it was generally distributed in Bosnia.

In these regions iron smelting was preceded by a long tradition of copper smelting, and the prehistoric metallurgists became highly skilled in the technique of copper- and bronze-working.¹⁵⁵ This part of the east Alpine area lies on the amber route: it was in touch not only with the Adriatic and Aegean, but also with the Baltic region. The peoples living here were under the constant pressure of migrating tribes coming down from the north. Thus the population of this territory exploited the mineral wealth offered by the environment.

The central position of the northwest Balkans and the southeast Alps in the European iron metallurgy was recognized by Central European archaeological research quite early. P. Reinecke,¹⁵⁶ A.

¹⁴¹ Coghlan 1956, 33-34. Forbes 1950, 456-57.

¹⁴² Coghlan 1956, 34.

¹⁴³ Forbes 1950, 456. Coghlan 1956, 64.

¹⁴⁴ Coghlan 1956, 64.

¹⁴⁵ Lorimer 1950, 111-12.

¹⁴⁶ G. A. Wainwright, "The Coming of Iron," *Antiquity* 10 (1936) 5-24; 21-22.

¹⁴⁷ Rickard 1939, 86. Forbes 1950, 415.

¹⁴⁸ See also Coghlan 1956, 38-60.

¹⁴⁹ W. A. Heurtley-O. Davies, "Report on Excavations at the Toumba and Tables of Vardarofsa, Macedonia, 1923, 1926," *BSA* 28 (1926/27) 195-200; 197-198. Cf. Lorimer 1950, 114. Forbes 1950, 415.

¹⁵⁰ Lorimer 1950, 115. J. G. D. Clark, *Prehistoric Europe, the Economic Basis* (London 1952) 199-200. Coghlan 1956, 64.

¹⁵¹ Desborough 1952, 308-12.

¹⁵² Forbes 1950, 457.

¹⁵³ Cf. G. Karo, "Schatz von Tiryns," *AM* 55 (1930; quoted infra as Karo 1930) 119-40. See pp. 135-36 and fig. 6.

¹⁵⁴ Richardson 1934, 561-62. Coghlan 1956, 60. Witter 1942, 75ff.

¹⁵⁵ Richardson 1934, 556, 560 and 564. Merhart 1952, 1-71. V. G. Childe, "The First Bronze Vases to be made in Central Europe," *ActaA* 20 (København 1949) 257-64. G. F. C. Hawkes, "Chronology of the Bronze and Early Iron Ages, Greek, Italian, Transalpine," *Atti del Iº Congresso Internazionale di Preistoria e Protostoria Mediterranea* 1950 (Firenze 1952; quoted infra as Hawkes 1952) 256-64; 260-64.

¹⁵⁶ P. Reinecke, "Die Herkunft des Eisens unserer vorrömischen Funde," *Germania* 10 (1926) 87-95; 92-93.

Mahr,¹⁵⁷ A. Rieth,¹⁵⁸ W. Witter,¹⁵⁹ E. Vogt,¹⁶⁰ G. v. Merhart,¹⁶¹ E. Srockhoff¹⁶² and others have stressed the significance of this area in the evolution of iron-working.

In the present state of research it is still an open question as to when and how the knowledge of iron production was introduced from Asia Minor to the northwest Balkans. It may be of interest to mention Merhart,¹⁶³ who believes that shortly before the fall of Mycenae some metallurgists may have gone from the northwest Balkans to Asia Minor where they learned the methods of iron-working and returned with this knowledge to their homeland. Childe¹⁶⁴ has considered that the abundance of metal during the Late Bronze Age must be connected with the development of mining in the eastern Alps. He believed that the concentrated resources of the Minoan-Mycenaean civilization supported the initial expenditure of specialist labor in this area. Mycenae "was near enough to the Alps and the Ore Mountains to form an effective market for raw materials. It had been in fact importing one raw material through Central Europe since the sixteenth century." Of course, then, prospectors may have come from there.

Heurtley and Davies,¹⁶⁵ and later Forbes,¹⁶⁶ suggested that the method of extracting malleable iron from the ore came from northeastern Asia Minor through Thrace and Macedonia to the northern parts of the Balkans.

It can be said with certainty that at latest around the end of the period Hallstatt B (this period may be dated between 1000 or 950 and 800 or 750 B.C.) iron-working was established in the southeast Alps.

¹⁵⁷ *Treasures of Carniola. The Unique Collection of Prehistoric Antiquities Excavated by H. H. the Late Duchess Paul Friedrich of Mecklenburg* (New York 1934) 7-8; 65 (B. Saria).

¹⁵⁸ Rieth 1942, 128, 136-37.

¹⁵⁹ Witter 1942, 75ff.

¹⁶⁰ Vogt 1950, 214f.

¹⁶¹ Merhart 1952, 39.

¹⁶² Srockhoff 1957, 40ff.

¹⁶³ Merhart 1952, 39.

¹⁶⁴ V. G. Childe, "The Final Bronze Age in the Near East and in Temperate Europe," *ProcPS* (1948; quoted infra as Childe 1948) 177-95; see 189 and 201ff. But cf. Pittioni 1954, 280.

¹⁶⁵ Heurtley-Davies, *BSA* 28 (1926/27) 197-99.

¹⁶⁶ Forbes 1950, 457.

¹⁶⁷ Staré 1955, 70. It is significant that W. Modrijan ("Neue Ausgrabungen in Steiermark," *Zeitschrift des Historischen Vereins für Steiermark*, Jahrg. 44 [Graz 1953] 3-30; Sec. 9-12) discovered an iron smelting site of the Late Urnfield Culture (Group Maria Rast, period Hallstatt B in Reinecke's chronology) in Tillmitsch near Leibnitz.

¹⁶⁸ Kossack 1959, 56.

Staré¹⁶⁷ has pointed out that the inhabitants of Vače "were interested in the acquisition of iron" during the phase Vače I which is partly parallel¹⁶⁸ with period Reinecke B. The vicinity of Vače is very rich in iron ores which can be collected from the upper surface. It is very probable that the material of the earliest iron smelting was not mined in the modern sense of the term.¹⁶⁹ The prehistoric miner did not know of shaft-sinking, but could only drive the open-cast ahead.

During the period Hallstatt B iron spread from the northwest Balkans and southeast Alps as far as to Switzerland,¹⁷⁰ Czechoslovakia¹⁷¹ and north Germany.¹⁷² Iron was first used as a part of bronze implements and weapons, but it gradually replaced the bronze, though both metals were used side by side for a few centuries.

Iron-working played a very important rôle in the economic and social evolution of the northwest Balkans and southeast Alps.¹⁷³ In the Roman Age the excellence of the Noric iron was well-known and its quality was praised even by the poets.¹⁷⁴ According to Pliny¹⁷⁵ only the iron from Seres and that of the Parthians were superior to the Noric.

Scholars working on the prehistory of Greece have observed the importation of iron from the north. Valmin¹⁷⁶ and Miss Lorimer¹⁷⁷ thought it possible that an iron dagger and the knowledge of the method of producing malleable iron reached Malthi from Central Europe by way of the Adriatic. Another source of supply was found on the settlement of Vardaroftsa, about twenty miles from the mouth of the Vardar.¹⁷⁸

Concerning the Kerameikos, Miss Lorimer has

¹⁶⁹ Coghlan 1956, 16-20.

¹⁷⁰ Vogt 1950, 214-16. Rieth 1942, 10-15.

¹⁷¹ R. Pleiner, "Základy slovanského železářského hutnictví v českých zemích" (German summary: "Die Grundlagen der slawischen Eisenindustrie in den böhmischen Ländern") *MonumentaArch* 6 (Prague 1958) 258 (with previous bibliography).

¹⁷² Srockhoff 1957, 41-42. For Poland see J. Kostrzewski, "Studien über die ältere Eisenzeit in Polen," *ActaA* 29 (København 1958) 51-94; 55ff.

¹⁷³ H. Müller-Karpe, "Das Kriegergrab von Villach," *Festschrift für Rudolf Egger* I (Klagenfurt 1952) 104-13; 113. Stane Gabrovec, *Najstarejša Zgodovina Dolenjske* (with French summary) (Novo Mesto 1956) 71-72. Kossack 1959, 3-4.

¹⁷⁴ Ovid, *Metamorphoses* 14.712. Horace, *Carm.* 1.16.9-10 and *Epop.* 17.71. Cf. Richardson 1934, 563.

¹⁷⁵ *Nat.Hist.* 34.41. For the iron-working of the Roman Age see W. Schmid, *Norisches Eisen* (Wien 1932).

¹⁷⁶ M. Natan Valmin, "The Swedish Messenia Expedition," *Acta Reg. Societatis Humaniorum Litterarum Lundensis* 26 (Lund 1938) 103-04 and 371-73.

¹⁷⁷ Lorimer 1950, 112.

¹⁷⁸ *ibid.* 114.

shown that the earliest iron weapons cannot have been produced locally,¹⁷⁹ and that iron had been imported to Athens regularly. In her view, Crete was the intermediary through which the people of the Kerameikos first got their iron swords from Cyprus.¹⁸⁰ However, it is hardly conceivable that iron was brought to Athens from Cyprus via Crete. It is more probable that it came from the iron-producing regions of the southeast Alpine area and from the northwest Balkans, since Mycenae had trade relations with Central Europe from the middle of the second millennium on and this contact continued later. In addition to this, the first iron weapons of Athens have their parallels in Central Europe, as we have seen above.

The iron articles in the heterogeneous tomb-rover's hoard from Tiryns were previously considered as imported from Syria,¹⁸¹ but the amber, the long sword,¹⁸² the Hallstatt-bird on the bronze cup,¹⁸³ and the gold wheels¹⁸⁴ of this treasure point to the north, and the whole find is of a later date than the thirteenth century B.C.

In addition to the iron objects, there is another assemblage of findings for which we have no local antecedents in the Late Bronze Age of the Aegean. Milošić¹⁸⁵ and Kossack¹⁸⁶ have pointed out that fine handmade pottery appears in several Proto-geometric graves of the Kerameikos cemetery,¹⁸⁷

¹⁷⁹ *ibid.* 115-16.

¹⁸⁰ *ibid.* 117.

¹⁸¹ *ibid.* 112-13 and Karo 1930, 135-36.

¹⁸² Karo 1930, Beilage 37 and p. 135. Cf. E. T. Vermeule, "The Mycenaean in Achaia," *AJA* 64 (1960; quoted infra as Vermeule 1960) 1-21; 14-15.

¹⁸³ Karo 1930, 130 and Beilage 24:1. Childe 1948, 185-86. Cf. C. F. C. Hawkes, "From Bronze Age To Iron Age: Middle Europe, Italy, and the North and West," *ProcPS* (1948; quoted infra as Hawkes 1948) 96-218; 202. Childe and Hawkes erroneously speak of a "gold" cup. Merhart 1952, 39. G. Kossack, "Studien zum Symbolgut der Urnenfelder- und Hallstattzeit Mitteleuropas," *RömGermForsch* 20 (Berlin 1954; quoted infra as Kossack 1954 c) 62-63. Although there are early bird representations in the Aegean, the Danubian "Hallstatt" (or rightly "Urnfeld") bird in its peculiar composition is not indigenous to the Mycenaean culture and is a foreign symbol in the Proto-geometric of Athens.

¹⁸⁴ Childe 1948, 186. We shall return to the problem of the gold finds in Athens.

¹⁸⁵ Vl. Milošić, "Die dorische Wanderung im Lichte der vor geschichtlichen Funde," *AA* 43-44 (1948/1949; quoted infra as Milošić 1949) 12-36; 30-34 and fig. 4.

¹⁸⁶ Kossack 1954 c, 63-64.

¹⁸⁷ See the graves 33, 37, 39 and 48 in *Kerameikos* IV (1943) 36-45. The handmade fine pottery from the Agora is being published by Mrs. E. L. Smithson. Cf. also *Hesperia* 2 (1933) 565-66 and figs. 24-25.

¹⁸⁸ B. Milleker, *A vattinai ötelep* (Temesvár 1905). M. V.

and it has been found also in the Agora. Some types of this ware have their best parallels in the so-called Vattina-Dubovac-Zuto Brdo group¹⁸⁸ in northeast Yugoslavia where this pottery is characteristic of the Middle and the Late Bronze Age.

The center of the Vattina-Dubovac-Zuto Brdo group lies in the Banat, in the Danube area of Serbia, in Oltenia¹⁸⁹ and in the Bulgarian Danube region. But it found its way along the Morava as far down as Čuprija, and into western Bosnia.¹⁹⁰ A more complete exploration of the Macedonian sites¹⁹¹ will probably bring important new data concerning the trade and migration routes between north Greece and the Danubian lands during the Late Bronze Age. The passage is easy from the Morava Valley to the Vardar Valley.

In the above-mentioned graves of the Kerameikos¹⁹² anthropomorphic idols and theriomorphic symbols were found beside shallow bowls, pointed pyxides, spindle whorls, etc. The bronze bird-head of grave 39,¹⁹³ the ox-headed bronze handle of grave 48,¹⁹⁴ the deer-shaped painted clay vessel of grave 39,¹⁹⁵ the idols of graves 33 and 48,¹⁹⁶ have been considered to be of Central European inspiration and origin.¹⁹⁷

The source of Athenian gold during the Proto-geometric and Early Geometric periods¹⁹⁸ may similarly be sought in the north, perhaps in Trans-

Garašanin, "Neolithikum und Bronzzeit in Serbien und Makedonien," *BRGKOMM* 39 (1958; quoted infra as Garašanin 1958) 1-130; see 82-89 and 95f., figs. 15-16, pls. 17-18.

¹⁸⁹ V. Dumitrescu, "Şantierul arheologic Cirna (reg. Craiova, r. Gura Jiului)," *Materiale și Cercetări Arheologice* 3 (1957) 189-201 (with previous literature). Cf. D. Berciu-Eug. Comă, "Sapăturile arheologice de la Balta Verde și Gogosu (1949 și 1950)," *ibid.* 2 (1956) 251-489. See esp. 283, 286 and 292.

¹⁹⁰ A. Benac, "La civilisation slavonne et illyrienne du site préhistorique de Zecovi, près de Prijedor," *Glasnik Zemaljskog Muzeja u Sarajevu* 14 (1959) 47-51.

¹⁹¹ Chauchitsa yielded a sword with iron blade and bronze hilt (Casson 1926, fig. 50). A good analogy to this weapon is known from Pančevo near Beograd (Merhart 1952, 39, note 116). The iron slag from Vardarofta was already mentioned above.

¹⁹² See note 187.

¹⁹³ *Kerameikos* IV (1943) pl. 39. Kossack 1954 c, 63-64.

¹⁹⁴ Kossack 1954 c, 64 and Merhart 1952, 24-25.

¹⁹⁵ *Kerameikos* IV, pl. 26. Kossack 1954 c, 63-64.

¹⁹⁶ *Kerameikos* IV, pl. 31. Kossack 1954 c, 63-64.

¹⁹⁷ For further details on Central European symbols in Greece see Kossack 1954 c, 63-69 and E. Sprockhoff, "Nordische Bronzezeit und frühes Griechentum," *JbRGZM* 1 (1954) (quoted below as Sprockhoff 1954) 24-110; see esp. 36-71 and 77 f.

¹⁹⁸ See *Kerameikos* I, pl. 76 (Grave 5); *Kerameikos* IV, pl. 39 (Graves 22 and 25) and p. 25. Cf. Rodney S. Young, "An Early Geometric Grave near the Athenian Agora," *Hesperia* 18 (1949) 288.

sylvania. There were, of course, many gold mines in Thrace, Macedonia and Greece, but Forbes²⁰⁰ believes that these, or at least most of them, were exhausted soon after their tapping started in the Bronze Age.

On the other hand the Carpathian Basin, chiefly Transylvania, was very rich in gold, and placer mining²⁰¹ has continued there until recent times. The knowledge of the methods of gold-producing reached this area from the Balkans.²⁰² A highly developed gold metallurgy flourished in the Carpathian Basin from the Copper Age (last centuries of the third millennium B.C.) on. At least fourteen sites yielding gold objects are known from the territory of the Bodrogkeresztur Culture.²⁰³ A gold pendant from Mojgrád weighs 750 grams (Copper Age).

Roska published gold finds from 125 prehistoric sites in Transylvania²⁰⁴ in 1942, but his list is no longer complete.²⁰⁵ It is of significance that native electrum²⁰⁶ was mined there. An axe from Cöfalva²⁰⁷ (which site had connections with Mycenae²⁰⁸ during the Central European Middle Bronze Age) was of electrum. And electrum objects were in use also later. The Transylvanian

²⁰⁰ Forbes 1950, 151. The following gold mines are mentioned: Hebrus in Thrace, Strymon and Maritsa, the slopes of the Rhodope Mountains, and many of the islands, for instance: Andros, Thasos, Thera, Melos, Seriphos, Kimolos and Siphnos.

²⁰¹ Forbes 1950, 145.

²⁰² Vl. Miloščík, "Ein Goldfund der Kupferzeit aus Ungarn," *Germania* 31 (1953) 7-11; 9. P. Patay, "Kupferzeitliche Goldfunde," *Archäol* 85 (1958; quoted infra as Patay 1958) 45-46 (with detailed Hungarian text).

²⁰³ Patay 1958, 45. Cf. *Archäol* 86 (1959) 94.

²⁰⁴ M. Roska, *Thesaurus Antiquitatum Transsilvanicarum* (Kolozsvár 1942) 360-61, with good distribution map.

²⁰⁵ D. Popescu, "Cercetari arheologice în Transilvania," *Materiale și Cercetări Arheologice* 2 (1956; quoted infra as Popescu 1956) 41-250. See esp. 198-200. In this paper 134 sites with gold findings are mentioned.

²⁰⁶ Popescu 1956, 197. V. Parvan, *Getica* (Bucuresti 1926) 597. K. Pink, "Goldstabe von Dakien," *NZ NF* 21 (Wien 1928; quoted infra as Pink 1928) 1-11. See 2, 5, 9.

²⁰⁷ M. Ebert, *Reallexikon der Vorgeschichte* II (Berlin 1925) 339. Some objects of the gold find from Tiszaszöllös contain only 65% gold, others 80%, *Germania* 31 (1953) 8.

²⁰⁸ A. Mozsolics, *Der Goldfund von Velem-Szentvid. Praehistorica I* (Basel 1950; quoted infra as Mozsolics 1950) 19-25. See pl. viii. For cultural interrelations between Transylvania and Mycenae see also J. Werner, "Mykenae, Siebenbürgen, Skandinavien," *Atti del 10 Congresso Internazionale di Preistoria e Protostoria Mediterranea* 1950 (Firenze 1952) 293-308, and R. Hachmann, "Die frühe Bronzzeit im westlichen Ostseegebiet und ihre mittel- und südosteuropäischen Beziehungen," *Beiträge zum Atlas der Urgeschichte*, Heft 6 (Hamburg 1957) 165ff, 172-75 and pls. 69-70.

gold²⁰⁸ had high silver content. Its color was not reddish, but pale yellow and sometimes yellow-white.

Our Athenian gold spirals²⁰⁹ are not characteristic of a certain area or of a certain period. They were used as finger-rings, bracelets or hair-rings from the Copper Age on²¹⁰ through the Bronze and Early Iron Ages, and even later, in wide areas of Europe.²¹¹ The Protogeometric and Early Geometric gold objects from the Kerameikos and the Agora have not yet been analyzed. However, the electrum ring of the Agora was imported in all probability from the Transylvanian region (if it is really made of electrum). Electrum²¹² occurs also in Lydia, Egypt and Spain, but we have no definite evidence for commercial connections between those areas and Athens during the period in question. The other gold objects may also have come from Transylvania or the Carpathian Basin.

A possible alternative source of supply is the gold trade on the amber route. As mentioned above, the gold wheels with amber beads on the spokes in the Tiryns hoard²¹³ show northern connections. Childe has compared these with a simpler ornament from Hradec Kralové.²¹⁴ Western Hungary²¹⁵ and Yugo-

²⁰⁸ Popescu 1956, 197 and 236. Patay 1958, 46. A. Uzsoki, "Adatok a dunántúli aranymosás történetéhez," *Arrabonai* (Györ 1959) 74-82 (English summary: "Details of the History of Gold-Washing in Transdanubia," p. 82; quoted infra as Uzsoki 1959). See p. 75.

²⁰⁹ See note 198.

²¹⁰ *Germania* 31 (1953) 8 and pl. 1:2-4.

²¹¹ F. Tompa, "Adatok az öskori aranykereskedelem kérdéséhez," *Archäol* 50 (1937) 49-56 and fig. 23 (German summary: "Beiträge zur Kenntnis des urgeschichtlichen Goldhandels," 203-04. Good previous bibliography in the Hungarian text). Popescu 1956, 201, fig. 118:2; fig. 120: 1-2; fig. 121:1-4, 9-14; fig. 123:5; fig. 142:2-3, etc. Z. Vinski, "Die bronzezeitlichen Hortfunde von Lovas und Vukovar," *Vjesnik Arheološkog Muzeja U Zagrebu, Treće Serije* 1 (1958) 31-34. See pl. VI:1-22. Z. Vinski, "Die urgeschichtlichen Goldfunde in Jugoslawien," *Arheološki radovi i rasprave* 1 (Zagreb 1959; quoted infra as Vinski 1959) 232-36; 232 and pl. IV:21-24.

²¹² Pink 1928, 9, note 2. Forbes 1950, 213. Sp. Marinatos, *Kreta und das mykenische Hellas* (München 1959) 50; p. 118. Marinatos considers Egypt as source of the Mycenaean gold. However, as indicated above, gold may have come also from Transylvania.

²¹³ Cf. notes 181-84 supra. See also Sp. Marinatos, "Lausitzer Goldschmuck in Tiryns," *Festschrift für W. H. Schuchhardt, Deutsche Beiträge zur Altertumswissenschaft* 12/13, p. 151f.

²¹⁴ V. G. Childe, *The Danube in Prehistory* (Oxford 1929) 329. Cf. *The Prehistory of Czechoslovakia, Exhibition 1959, National Museum in Prague* pl. xvii. I. Hásek, "Troupailles de l'or de l'âge du bronze en Bohême et en Moravie," *Archeologické rozhledy* 7 (1955; quoted infra as Hásek 1955) 718-19. According to Dr. Jiří Hrala of Československá Akademie Věd, Archeologicky Ustav V Praze, similar gold ornaments are known

slavia²¹⁶ were rich in gold findings, but Hásek,²¹⁷ Uzsoki²¹⁸ and Vinski²¹⁹ consider the possibility of gold importation from Transylvania into Czechoslovakia, western Hungary and Yugoslavia. At the same time these authors assume that at least a part of the gold objects uncovered in Czechoslovakia, western Hungary and Yugoslavia was produced locally. And finally, we have to take into consideration that there were some local workshops in north Greece.²²⁰ Only the comparative chemical analysis of all objects will bring decisive evidence for the origin of Athenian gold during the Protogeometric and Early Geometric periods.

Though no leg-greaves²²¹ or Herzsprung shields²²² have been found in Athens, it is noticeable that these types also indicate close connections between Central Europe and the Greek lands.

It seems more than coincidence that, in addition to the imported copper, iron, amber, gold (and electrum), Central European types of tools, weapons, handmade fine pottery, anthropomorphic and theriomorphic symbols are also found in the Aegean with local products. These intrusive northern elements may have arrived there partly by trade, but partly by military contact with the northern "barbarians." At least an infiltration of smaller nomadic groups is indicated by those findings. The pertinent Protogeometric and Early Geometric sites in Athens point to two main routes of migration: the amber route (which connected north Greece with the East Hallstatt region), and the valleys of the Vardar and the Morava (through which an early contact existed between Greece and the Danube-Tisza-Transylvania area). There have been also other less important routes (along the rivers) available.

In the mixture of the native and foreign elements, the indigenous population predominated physically, but the culture of the numerically weak invaders

played a large part, thanks to their metallurgical skill and more integrated social organization.

These tribal movements may be connected with a great migration: the so-called Doric invasion which probably lasted a few centuries. The intruders from the East Hallstatt region are often identified with the Illyrians, and those from the Lower Danube-Banat area with the Thracians.

CHRONOLOGY

If we now return to Grave XXVII from the Agora, it will be apparent from what has already been said that concerning the chronology there can be no certainty; the conclusions offered must be considered tentative. On the basis of pottery types, our grave was assigned to the Early Geometric period in the Aegean chronological system. However, among the iron objects found in the same grave there are two types foreign to the Aegean: the bridle bits and the flat axe with lateral projections. Both of them are frequent in the eastern Hallstatt area where they belong to the period Hallstatt C in Reinecke's scheme (the horse-bits appear at the end of Hallstatt B). Thus Grave XXVII provides an important link between the two chronological systems, but its absolute date is difficult to determine.

The end of the Protogeometric²²³ in Athens is placed between 950 and 875 B.C. Even if we take the low date of 875, suggested by Desborough for the beginning of the Geometric in Athens, this seems somewhat too high in the Central European scheme. But, since the chronology of Central Europe depends ultimately on Greece for its dating, we have to look for a solution acceptable for both systems.

According to Hawkes²²⁴ Hallstatt C began about 650 "when the near-Alpine regions of Middle Europe adopted iron-working." His evidence is based

from Studce, district Nymburk. See *Památky Archeologické* 25 (1913) 67-79 and pls. III-IV.

²¹⁶ Mozsolicz 1950, Uzsoki 1959.

²¹⁷ Vinski 1959. The distribution map indicates the route of gold trade along the Dalmatian coast and along the rivers (map following p. 208).

²¹⁸ Hásek 1955, 719.

²¹⁹ Uzsoki 1959, 78 and 82.

²²⁰ Vinski 1959, 234-35.

²²¹ For instance: Vardaroftsa (Heurtley-Davies, *BSA* [1927] 197; gold slag). But the hair-rings of Marmariane (W. A. Heurley-T. C. Skeat, "The Tholos Tombs of Marmariane," *BSA* 31 [1930-31] 33-34) belong to the same general type as the Central European ones.

²²² R. Hampe, "Die Homerische Welt im Lichte der neuesten Ausgrabungen," *Gymnasium* 63 (Heidelberg 1956) 1-57; see

14-15. Merhart 1958. Vermeule 1960, 13f.

²²³ H. Hencken, "Herzsprung Shields and Greek Trade," *AJA* 54 (1950; quoted *infra* as Hencken 1950) 295-309. In this article Hencken was still undecided concerning the origin of the Herzsprung shields, but—according to Sprockhoff (1954, 74, note 86)—he later accepted the Central European origin of this type.

²²⁴ Kraiker, *Kerameikos* I, 164; Hawkes 1948, 216; C. F. C. Hawkes, "Chronology of the Bronze and Early Iron Ages, Greek, Italian, and Transalpine," *Atti del 10 Congresso Internazionale di Preistoria e Protostoria Mediterranea* 1950 (Firenze 1952; quoted *infra* as Hawkes 1952) 256-64. Chronological table after p. 262. Desborough 1952, 294.

²²⁵ Hawkes 1948, 216; Hawkes 1952, 262 and chronological table. Hencken 1950, 307.

chiefly on the assumption that the Early Iron Age of Central Europe started under the influence of the Etruscans and Greeks who had brought to Italy the iron-using civilization from the eastern Mediterranean in the eighth century B.C., and that certain bronze types made in Etruscan Italy were penetrating transalpine Europe around the middle of the seventh century.

However, as Merhart²²⁵ has demonstrated, the bronzes in question were first imported not northwards out of Italy, but southwards into Italy. Moreover, we have seen above that iron-working began in the southeastern Alps before 800 B.C. Archaeologists in Central Europe have recently dated the beginning of the period Hallstatt C between 800 and 750 B.C.²²⁶ But even if we suppose that the first iron flat axes in Europe originated in Slovenia and southwestern Hungary, we cannot assign to them a date prior to the last decades of the ninth cen-

tury B.C. In this case, a difference of approximately fifty years would remain between the *earliest* Central European and the *latest* Aegean dates. In present circumstances we can hardly resolve the issue between the two systems. We have only clarified it for further consideration.

Concerning the start of the Geometric in Athens and that of the period Hallstatt C in Central Europe, Aegean and Central European archaeologists seem to be inclined to borrow dates from each other, but the decisive evidence is missing on both sides. Therefore hypothetical dates are used in both chronological schemes. There is much work on the synchronization of these systems still to do. As matters stand now, I am inclined to place our Agora grave somewhere between 850 and 800 B.C.

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²²⁵ G. v. Merhart, "Donauländische Beziehungen der früh-eisenzeitlichen Kulturen Mittelitaliens," *Bonner Jb* 147 (1942) 1-90. Merhart 1952. Merhart 1953.

²²⁶ Merhart 1953, 216. G. v. Merhart, "Panzerstudie," *Origines, Raccolta di Scritti in onore di Mons. Giovanni Baserga* (Como 1954) 33-61; 52 and 54. Kromer 1959, 28. Benac-Cović 1957. H. Müller-Karpe, "Beiträge zur Chronologie der Urnenfelderzeit nördlich und südlich der Alpen," *RömGermForsch*

22 (1959) Textband, p. 132. G. Kossack, "Problemi cronologici della prima età del ferro in Italia e nell'Europa Centrale," *Atti del 1º Congresso Internazionale di Preistoria e Protostoria Mediterranea* 1950 (Firenze 1952) 368-92. See 373, fig. 3. W. Drack, *Ältere Eisenzeit der Schweiz. Materialhefte zur Ur- und Frühgeschichte der Schweiz*, Heft 1 (Basel 1958) and Heft 2 (1959).

APPENDIX

SITE INDEX OF THE IRON FLAT AXES WITH LATERAL PROJECTIONS ALONG THE AMBER ROUTE (pl. 96, fig. 2)

The catalogue below gives a list of the iron flat axes found on or near the Amber Route that connected Greece with Denmark and the Baltic region. The list presented here cannot be considered complete in all details. However, it is almost exhaustive for Yugoslavia, Austria, Hungary and Rumania. Lack of research and present political conditions did not make it possible to enumerate all unpublished examples, but our distribution map and catalogue should suffice even in the present form. The sites are indicated on the map by the same number as in the catalogue.

A) Attica

- 1) Agora. *Hesperia* 21 (1952) 287.
- 2) Kerameikos. K. Kübler, *Kerameikos* IV, 42 and pl. 38.

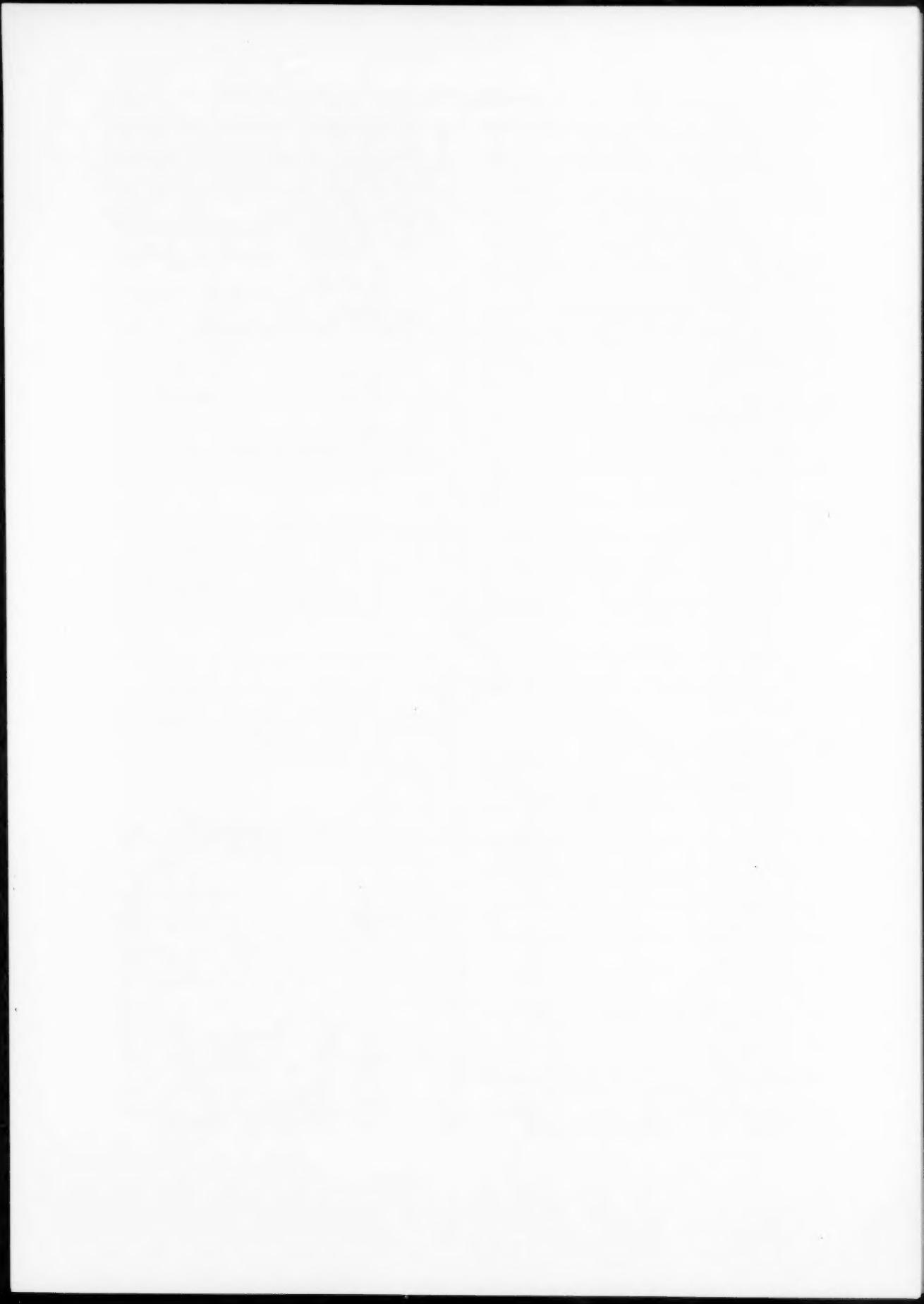
B) Yugoslavia

- 3) Ston on Pelješac, Dalmatia. *WMBH* 11 (1909) 101-03 and pl. xx:5.

- 4) Mahrevići, distr. Čajnice. *WMBH* 12 (1912) 18, fig. 5 and p. 20.
 - 5) Ilijak, Glasinac. *WMBH* 3 (1895) 11-12 and fig. 26.
 - 6) Sanskimost. *WMBH* 6 (1899) 66 and figs. 8-12.
 - 7) Luterče Selo near Novo Mesto. Narodni Muzej, Ljubljana; Inv. Nr.: P 4516.
 - 8) Šmarjetna near Novo Mesto. Narodni Muzej, Ljubljana; Inv. Nr.: P 5025.
 - 9) Stična. Narodni Muzej, Ljubljana. Found during the excavations in 1960.
 - 10) Magdalenska Gora. Narodni Muzej, Ljubljana; Inv. Nr.: 6770 c.
 - 11) Vače. Naturhistorisches Museum, Wien. Inv. Nr.: 8007.
 - 12) Rifnik. *Arheolski Vestnik* 7 (Ljubljana 1956) pl. xviii: 555.
 - 13) Kiskőszeg-Batina. Naturhistorisches Museum, Wien. Inv. Nr.: 38.504.
- C) Austria
- 14) Frög. *Carinthia* I, 147 (Klagenfurt 1957) 22, fig. 11:1.
 - 15) Goldes, Grell- and Ofenmacher-Wald, near Wies, Styria. *Mitt.Anthr.Ges.Wien* 15 (1885) 157.

- 16) Mantrach near Wies, Styria. *MittAnthrGesWien* 15 (1885) 164.
- 17) Hallstatt, Oberösterreich. *Archaeologia Austriaca* 24 (1958) 49.
- 18) Donaustrudel near Grein, Oberösterreich. Naturhistorisches Museum, Wien, Inv. Nr. 13.910.
- 19) Feichtenboden near Fischau, Niederösterreich. *MittAnthrGesWien* 54 (1924) 171 and fig. 11.
- 20) Malleiten near Fischau, Niederösterreich. Niederösterreichisches Landesmuseum, Wien, Inv. Nr. 10.559 a-b.
- 21) Kalenderberg near Mödling, Niederösterreich. *Ib für Altertumskunde* 6 (Wien 1912) 225.
- 22) Statzendorf, Niederösterreich. *MittPrähKomm-AkWien* 2 (1924) 21 and 27; graves 27 and 36.
- D) Hungary
- 23) Lengyel, Tolna County. M. Wosinsky, *Das prähistorische Schanzwerk von Lengyel II* (Budapest 1890), pl. XLIV:344-45.
- 24) Somlyóvásárhely, Veszprém County. Gallus-Horváth 1939, pl. LII:1.
- 25) Doba, Veszprém County. Gallus-Horváth 1939, pl. LXIII:3.
- 26) Sédviz, Veszprém County. Gallus-Horváth 1939, pl. LX:6.
- 27) Kismező, Vas County. *ArchÉrt* 78 (1951) 40 and pl. XXIX:e.
- 28) Sághegy, Vas County. *ArchÉrt* 78 (1951) 40.
- 29) Nagybarát, Györ County. Gallus-Horváth 1939, pl. LXV:5.
- 30) Gyöngös, Heves County. Gallus-Horváth 1939, pl. LXX:4.
- 31) Diósgyör, Borsod County. Gallus-Horváth 1939, pl. LXVII:15.
- E) Czechoslovakia
- 32) Smolenice, district of Trnava. B. Kostrzewski, "Znaczenie Odry w pradziejach," *Przeglad Archeologiczny* 8 (1949; quoted infra as Kostrzewski 1949) 291, Nr. 11 and p. 264; map XVI.
- 33) Niznia Mysl'a, district of Kosice. Kostrzewski 1949, 291, Nr. 9.
- 34) Byčí-Skala, district of Brno. Kostrzewski 1949, 291, Nr. 3.
- 35) Biskupstvo, district of Olomouc. Kostrzewski 1949, 291, Nr. 1.
- 36) Planany, district of Kolín, Kostrzewski 1949, 291, Nr. 10.
- F) Poland
- 37) Labedy (Laband), district of Gliwice. Kostrzewski 1949, 291, Nr. 7.
- 38) Strzelce—Adamowice (Gross-Strehlitz—Adamowitz). Kostrzewski 1949, 291, Nr. 12.
- 39) Jezierzyce Wielkie (Gross-Jeseritz), district of Dzierżoniów. Kostrzewski 1949, 291, Nr. 6.
- 40) Wojszyce (Hoinstein), district of Wrocław (Breslau). Kostrzewski 1949, 292, Nr. 13.
- 41) Wolów (Wohlau). Kostrzewski 1949, 292, Nr. 14.
- 42) Lazy (Lahse), district of Wolów. Kostrzewski 1949, 291, Nr. 8.
- 43) Chojno, district of Rawicz. Kostrzewski 1949, 291, Nr. 4.
- 44) Zaborowo, district of Wolsztyn. Kostrzewski 1949, 292, Nr. 15.
- 45) Brzesko (Brietzig), district of Pyrzice. Kostrzewski 1949, 291, Nr. 2.
- 46) Gorszewice, district of Szamotuly. Kostrzewski 1949, 291, Nr. 5.
- 47) Kazimierz. *Mannus-Bücherei*, vol. 70 (1942), 176.
- G) East-Germany
- 48) Schlöben near Jena. *Mannus* 7 (1915) 88.
- H) West-Germany
- 49) Dittenheim, district of Gunzenhausen. *PZ* 24 (1933) 99.
- I) Italy
- 50) Appiano-Eppan, province of Trento. Museo Civico, Bolzano-Bozen.
- 51) Crescino, province of Trento. Museo Nazionale, Trento; Inv. Nr.: 3279.
- 52) Sanzeno, province of Trento. *Civiltà del Ferro* (Bologna 1960) 313, pl. v: 1-3.
- J) Rumania
- 53) Birlad, Moldavia. *Dacia* N S 2 (1958) 61; fig. 2: 1-2.
- 54) Popesti, district of Mihailesti, Walachia. *Dacia* N S 2 (1958) 65.
- 55) Ferigele, Little Walachia, Oltenia. Information received from Dr. M. Petrescu-Dimbovita, Iassy, Moldavia (not indicated on our distribution map).
- K) Soviet-Union
- 56) Subotov, Middle Dnieper region, Ukraine, *Sov-Arch* (quarterly) 2 (1957) 54, fig. 4:6 (not indicated on our distribution map).

ADDENDUM. While this paper was in press, I have found in old and rare publications three more Italian sites where iron flat axes were discovered. P. Orsini (*Archivio di Alto Adige* 1 [1906] 32-34) mentioned three samples of our type from Niclar (Entiklar) near Cortaccia, province of Trento. VI. Dumitrescu (*L'età del ferro nel Piceno* [Bucarest 1929] 37 and fig. 4: 17) recorded a similar find from Cupramarittima, province of Ascoli, and P. Laviosa-Zambotti (*MonAnt* 37 [1938] 539) published a good parallel from Castelliere di S. Paolo, prov. of Trento. Concerning the Amber Route, A. Spekke's work, *Ancient Amber Routes and the Geographical Discovery of the Eastern Baltic* (Stockholm 1957) is of great significance.



News Letter From Greece

EUGENE VANDERPOOL

PLATES 97-100

ATHENS AND ATTICA. Their Royal Highnesses the Princesses Sophia and Irene and their tutor Miss Arvanitopoulou have done some archaeological reconnaissance in Athens and Attica and have set down their findings in a monograph entitled *'Αρχαιολογικά Πουκίλα* (Athens 1960). They publish a number of inscriptions and sculptures, some of which they have discovered or salvaged themselves, and others which have been known for a long time but are lying neglected in courtyards or entries or are built into walls and chapels in the country. They make an appeal that such material be gathered up and kept in small collections near the place of finding, for example in parks in the city or in school yards in the villages. Thus the antiquities could be enjoyed in their proper setting and yet would be protected.

The new inscriptions are seven tombstones from Athens and a large grave stele found near Menidi with the names of four men from Acharnai. The most interesting, however, are two boundary stones of the fourth century B.C. which marked the course of an aqueduct carrying water from the foothills of Parnes to the deme of Acharnai. The inscriptions were found in the Varibopi area between Dekelia and the Tatoi airport in a bare, uncultivated tract known as Psorilla which is now being divided up into building lots. One of the inscriptions is complete except for a fragment at the lower left and reads as follows:

"Ορος ἐνναίας πεπρα-
μένης καὶ ὀχετῶν δια-
γωγῆς παρὰ Κτήμονος
Συπαληττίου ἐκ τοῦ χω-
5 [ρ]ίου τούτου εἰς τὸν ἄπ-
[αν]τα χρόνον ΙΙΙ Δραχμ-
[ὰς] τοῦς κοινωνοῖς τοῦ
['Αχα]ρνικοῦ ὀχετοῦ ὥσ-
[τέξ]ειναι αὐτοῖς ἄγει-
10 [ν τὸν ὅ]λητὸν βάθος
[ὅσον ἄν] βούλωνται.

Of the other inscription the lower half is missing, but the text as far as preserved is identical with

the first except for the name, which here is *'Ανθε-μίων Κηττίου*. The amount of money paid is not preserved. The word *ἐνναία* does not occur elsewhere. The editors suggest that it is derived from the verb *νάω*, flow, and this is borne out by the context, though the exact meaning of the word is not clear.

PIRAEUS. The cleaning of the bronze statues found in 1959 has continued (*AJA* 64 [1960] 265-67). The kouros (*op.cit.* pl. 66) has responded well and the few patches of bronze disease have been cured. The blisters that covered the body have been carefully removed by mechanical means. The statue is to be set up on temporary exhibit in the National Museum in Athens in a few months. The small Artemis (*op.cit.* pl. 70) cannot be cleaned in the same way as the kouros because the corrosion has progressed too far. It has been consolidated as far as is possible, and further deterioration prevented. The other two statues, whose condition is relatively good, are still in Piraeus. They will be treated when work on the first two is finished.

KEPHISSIA. A chance discovery of some interest was made in Kephissia in February 1961 when foundations were being dug for an addition to a private house at no. 4 Rangabe Street. A well preserved, life-sized bust of Herodes Atticus was found (pl. 97, fig. 1) and with it a bust of one of his favorites, Polydeukion (pl. 97, fig. 2). There was also an arm in black marble, no doubt part of a statue of the Ethiopian Memnon, another of Herodes' favorites. The head of a horse was also found. The Archaeological Service ordered an investigation within the limits of the lot where the discovery was made. Mr. Petrakos supervised the work. A stuccoed channel, some walls of *opus incertum*, a pilaster base *in situ* and a pilaster cap were found.

We probably have to do with the villa of Herodes Atticus so delightfully described by Aulus Gellius in the *Attic Nights* (1.2. 1-2). The place where the discovery was made is just behind the chapel of the Panagia Xydiou, a few blocks north of the railway station. Other remains that have been associated

with Herodes' villa have been observed near this church (Dragoumis, *ArchEph* [1895] 186; Koumoundis, *Neon Athenaion* I [1955] 1-3).

PERATI. Mr. Iakovides continued his work in the Mycenaean cemetery of Perati on the north side of the bay of Porto Raphi where he has been digging since 1953. Over a hundred tombs have now been excavated, all of them belonging to late Mycenaean times, the pottery being mainly of the Granary Class and Close Style. Tomb 104 was of special interest. It was a small chamber tomb and contained a single burial, that of a child. It contained five vases (pl. 98, fig. 4), a sard gem, four cockle shells, a small bronze cup with barely discernible engraved decoration on the lip, and a glass paste cartouche with the name of Pharaoh Ramses II (pl. 98, fig. 5). This, and a similar discovery made in 1953 (*Praktika* [1953] 95), give an important clue to the date of the Perati cemetery.

MERENDA. At Merenda, the ancient deme of Myrrhinous, in the Attic Midlands about two kilometers southeast of Markopoulo, a geometric grave was discovered when a tractor-drawn plow brought an amphora to the surface. Mr. Papadimitriou ordered an investigation, and Mrs. Ninou supervised the work. Twenty-six graves were cleared, and there are undoubtedly more in the area. The majority were of late geometric times and contained some interesting vases. A few were later, of the sixth and fifth centuries B.C. The cemetery lies about 200 meters north of the chapel of the Panagia. It will be recalled that some fourth century graves were found in 1952 on the slope of a low hill about 500 meters farther to the northeast.

ANAVYSSOS. In the Anavyssos area, about 300 meters from the shore near the village of Phokaia, a fifth century B.C. grave was discovered. There was a stone sarcophagus made up of separate slabs of stone, one for each of the sides. Several very fine white lekythoi were found on the grave, of which I illustrate one through the kindness of Mr. Petrakos who supervised the excavation (pl. 98, fig. 3). Another grave, also containing fine white lekythoi, was found nearer the sea about two years ago.

OLYMPIA. The excavation of the stadium was completed after two years' work on the north embankment. This embankment is now to be reconstituted, and when this has been done we shall be able to view the Olympic stadium as it was in late classical

times, from the middle of the fourth century B.C. onwards (Stadium III).

In the course of the excavation the altar of Demeter Chamyne was located, in the position described by Pausanias directly opposite the box in which the Hellanodikai or chief judges of the games sat. From this altar the priestess of Demeter was privileged to watch the games. The altar was very poorly preserved and would scarcely have been recognized without Pausanias' description. A few fragments of poros blocks were all that remained and beneath them ashes from an earlier altar.

Not much had been expected in the way of finds from this embankment because the natural slope of the hill made unnecessary the great mass of earth filling that had been used at the south. A pleasant surprise was in store for the excavators, however. The hillside proved to be honeycombed with wells which had been dug from time to time to provide water for the spectators at the games and then refilled. Over 40 such wells were found of which the latest was refilled about 460 B.C. at the time of the construction of the first monumental stadium (Stadium II). Many of them contained discarded votives of great interest. Through the kindness of Mr. Kunze I am able to illustrate or describe a few of these pieces. In some cases the preservation of the bronzes is remarkably good. The presence of sulphur in the ground had prevented oxidation, and the metal has not only remained a gleaming copper color but has retained its elasticity. A shield, whose rim is illustrated in pl. 99, fig. 9, is a case in point; another is a conical helmet of great historical interest. It was taken by the Athenians from the Persians, as we learn from the dedicatory inscription incised upon it: Διτ Ἀθεναῖοι Μέδον λαβόντες.

A bronze greave (pl. 99, fig. 10) is a trophy of the Argives taken from the Corinthians and bears the same inscription as appeared on a helmet found in 1959, and on a helmet and probably on a shield from the original excavations (Dittenberger-Purgold, *Inschriften von Olympia* nos. 250-251).

Among the bronze statuettes we may note a Silenus (pl. 99, fig. 11), one of three similar figures found in the north embankment. It was attached to a vase.

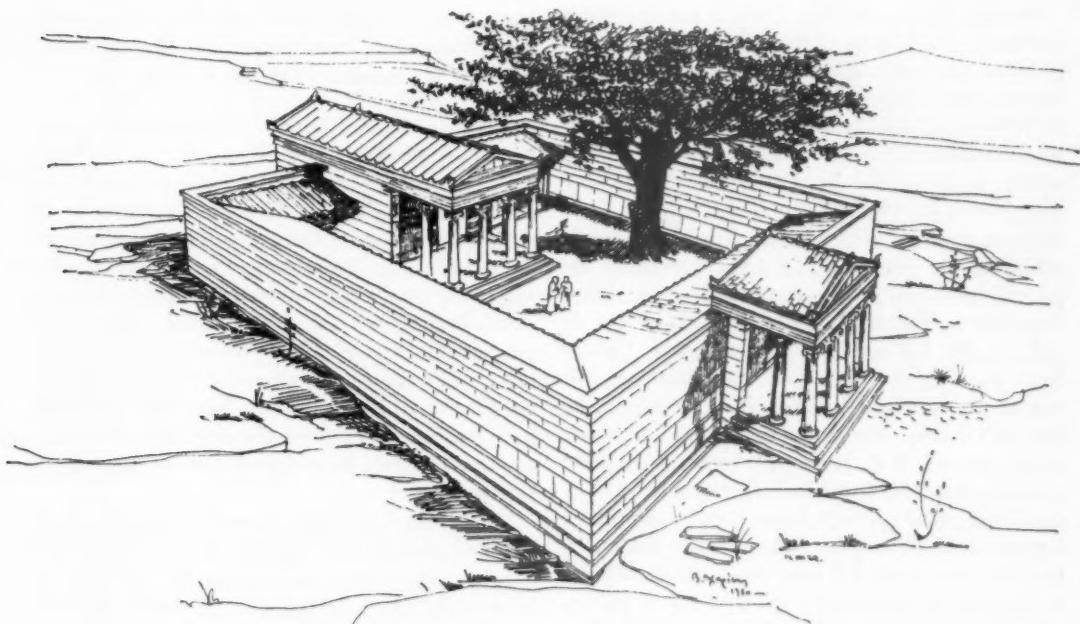
An inscribed bronze plaque of the sixth century B.C. contains the short but complete text of a treaty of friendship between the people of Sybaris and the Serdaians. The latter, who are not otherwise known, must be a barbarian people of southern Italy. Zeus,

Apollo and the other gods, and the city of Poseidonia are mentioned as guarantors. This is the only inscription of ancient Sybaris so far known.

The filling of the embankment produced a number of Early Helladic sherds of very fine quality out of which it was possible to make up a sauce boat. Although the sherds were not found in a stratified deposit they must come from nearby and

DODONA. Mr. Dakaris is preparing a comprehensive study of the sanctuary at Dodona based on investigations made in the course of the last thirty years by the late Professor Evangelides and in which he himself has taken part since 1952. A summary has recently appeared in the supplement to the *Great Greek Encyclopaedia* (Pyrros).

In early times the worship took place in the open



ILL. 1. Dodona. Temple, enclosure and sacred oak tree

are thus important as being the first Early Helladic remains from Olympia.

There is an excellent, well illustrated summary of the work at Olympia since 1936 in Mr. Kunze's chapter of a volume entitled *Neue deutsche Ausgrabungen im Mittelmeergebiet und im vorderen Orient*, published by the German Archaeological Institute (Berlin 1959) 263-310. The same volume also has articles on recent work in SAMOS, THESSALY, the KABEIRION near Thebes, the KERAMEIKOS in Athens, and other sites outside the scope of this News Letter.

A new model of Olympia (pl. 99, fig. 8) has been constructed by Mr. and Mrs. Mallwitz and is now on exhibit at Essen in Germany.

air, centering around the sacred oak tree. Here the bronze tripods mentioned in the authors will have been grouped; fragments of these tripods dating back into the eighth century B.C. have been found in the excavations. The first stone building was not erected until the beginning of the fourth century B.C. This was a small structure with a cella and a pronaos, but no columns. Soon afterwards a low peribolos wall was erected enclosing the temple and the sacred oak. The reign of Pyrrhos in the early third century was a period of great building activity. The peribolos was replaced by a larger enclosure with Ionic colonnades facing inward on three sides, the fourth being left free for the tree. The great theater was also constructed at this time.

In 219 B.C. the sanctuary was destroyed by the Aetolians but was soon rebuilt on a more lavish scale. The temple, or *Hiera Oikia* as it was called, was enlarged and given a porch with Ionic columns and an adyton. The peribolos again had colonnades facing inward on three sides, and an Ionic propylon was added as an ornamental entrance. A restored drawing of the sanctuary as it appeared after this renovation is reproduced in Ill. 1.

EPHYRA, THESPROTIA. Mr. Dakaris has excavated further at the famous Oracle of the Dead on the Acheron river near Mesopotamos, which he identified and partly cleared in 1958 (*AJA* 63 [1959] 282; *BCH* 83 [1959] 665-69; *Ergon* [1958] 95-103). Work was concentrated on the central sanctuary building which is surrounded by a very thick (3.30 m.) polygonal wall. The building is divided into three sections, a central aisle without divisions (beneath which is the great vaulted crypt previously reported), and two side sections, each divided into three rooms. The walls stand to a height of 3.50 m. (pl. 100, fig. 13) and their surfaces show damage from the fire that destroyed the sanctuary and caused the offerings stored in it to be buried. In the central aisle there was a thick layer of broken pottery on the floor. In the side rooms were great piles of grain (wheat and barley), pithoi which had contained liquid (perhaps honey), and various iron implements such as plows, shovels and sickles. In the first room at the left were two good sized busts of Persephone in terracotta (ht. 0.22 m., pl. 99, fig. 12). The first room at the right contained eight pithoi around the walls (pl. 100, fig. 14), many vases (pl. 100, fig. 15) and much carbonized grain. The second room contained piles of bowls, overturned amphorae, a marble basin and again much carbonized grain. In one of the corridors outside were traces of pyres and of pits with the bones of animals that had been sacrificed, sheep and goats, bulls and a few pigs.

The existing monumental remains date from Hellenistic times, but the location of the sanctuary and the types of sacrifices attested by the remains correspond closely with Homer's description (*Odyssey* 10.508ff; 11.24ff; cf. *Pausanias* 1.17.5).

GOUMANI, THESPROTIA. Mr. Dakaris reports the discovery of two Hellenistic cremation burials near the acropolis on the north bank of the Kalamas

River not far from its mouth described in *ArchEph* (1952) parartema 13-14. From the same area comes a fragment of a stone stele with a manumission decree in which the Koinon of the Thesprotians is mentioned. It dates from the middle of the fourth century B.C. and is the second known inscription mentioning this Koinon, the other having been found at Dodona (Collitz-Bechtel, *SGDI* 1370). Mr. Dakaris believes that the discovery of this inscription strengthens the view that the site at Goumani is the ancient Gitane, seat of the Koinon of the Thesprotians, and distant ten Roman miles from the sea, opposite Corcyra (*Livy* 42.38).

CORCYRA. Mr. Kallipolitis' excavations of recent years have produced interesting information bearing on the date of the founding of the original Corinthian colony. The archaeological evidence is as yet not very extensive and depends on soundings in the area of the early Christian church at Palaeopolis and in the nearby park of Mon Repos. The earliest sherds from these soundings are of the earliest Protocorinthian style (pl. 98, figs. 6 and 7) which points to a date in the second half of the eighth century B.C. Of the several dates that have been adduced from the literary evidence the most favored is 734 B.C. and with this the archaeological evidence is in agreement.

Among the sherds from the early layers the most common imports are naturally from Corinth, but from the beginning there appears to have been a local fabric which imitates, yet is clearly distinct from, the Corinthian. Imports from other centers such as Sparta, Euboea and Rhodes are sporadic. The earliest Attic import is of about the middle of the sixth century. Some of these results have already been published in *Praktika* for 1955 and in the *Ergon* of the Archaeological Society for 1955, 1956, 1957 and 1958, and an article is to appear in the next number of *Archaiologike Ephemeris*.

The sherds from Mr. Kallipolitis' soundings come from stratified deposits in an area that was inhabited throughout classical antiquity, not from a cemetery. This shows conclusively that the ancient city was located in the Palaeopolis area, which has long been the accepted view, and not in the area of the modern town as A. W. Gomme suggested recently in his *Historical Commentary on Thucydides* II, 370-72.

PETRALONA, CHALCIDICE. Although it belongs to the field of anthropology rather than that of archaeology, we may note the discovery, reported in the Athens press (*Vima*, February 5, 1961), of a fossilized skull of Neanderthal type of the Middle Palaeolithic period, the first to be found in Greece. The skull was dis-

covered by chance in a cave near the village of Petralona in Western Chalcidice about ten kilometers from the coast and some 25 kilometers northwest of Potidaea.

AMERICAN SCHOOL OF CLASSICAL STUDIES
ATHENS



Archaeological Notes

THE X-RAY GEIGER-COUNTER SPECTROSCOPE AS AN ARCHAEOLOGICAL INSTRUMENT*

As part of a definitive study of Nabataean wares, the X-ray Geiger-Counter Spectroscope was employed in the analysis program. Since this is the first use of this instrument for purely archaeological purposes, and upon ancient Near Eastern pottery specifically, the following information is brought to the attention of archaeologists interested in the technique.

The method in the present study was that followed for the examination of geologic samples. Selected sherds, of specific loci, type and wares, were broken into pieces of ca. one square cm. in size. These samples were then broken by mortar and pestle into smaller pieces and ground mechanically into a fine powder, using acetone as a lubricant and binder. The mixture was then spread upon a glass slide and air dried. An even layer, without ridges or open areas, must be deposited on the glass. In certain cases a collodion-acetone binder may be helpful, but was not found necessary in the present study.

The prepared slide was then placed in the instrument and the scanning operation begun. Depending upon variables of ware, components, instrument, etc., the rate of scanning must be found by trial and error and a number of runs made to achieve maximal reading in "critical" areas.

Examination of the graphs thus made was done by physical comparison (over a light-box) and mathematically (on the basis of published tables). Comparisons were made between "like" wares of the same site, between "like" wares from different sites, and between varieties of "like" and "unlike" wares. The usual archaeological criteria were applied in the empirical categorization of similarities.

The results of the present study were disappointing

* The present experimentation was conducted with the equipment belonging to the Geology Department of Yale University, and appreciation must be expressed to that Depart-

in certain respects, and the limitations of this method must be made clear. First of all, in the realm of identification of components there was no definitive result achieved. The instrument will achieve results only roughly comparable to detailed chemical analysis (and much below such analysis when clay components are low in percentages). This does not mean that differences were not found—but the exact meaning of those differences is still undetermined. This difficulty perhaps may be alleviated in future experiments by a lower scanning rate, or by the separation of granules into smaller particles.

Second, the results of this method, just as by chemical analysis, must be treated with great care as an indication of anything more than supplementary information. The very nature of pottery clay is such, chemically, that it is highly dangerous to attempt to generalize upon it. Significant variations may well occur between widely separated clay pits—but, and more importantly, significant variations may also occur within layers and areas of *one* pit, as well as from factors associated with handling, tempering and firing.

In favor of the use of this new technique, however, it must be said that it does supplement purely visual comparison of wares, it adds to our knowledge of ware structures and, after further experimentation has been conducted, it may well furnish more positive identifications of clay components.

Further, the speed attainable and the lower cost per sample are also factors to be considered when general results are desired over a large number of samples for comparison. Still more important is the fact that resulting patterns can be visually compared (on graph tracings), even by "laymen." Obviously, detailed study of any given pattern, or detailed interpretation of it, must presuppose more background information.

PHILIP C. HAMMOND

PRINCETON THEOLOGICAL SEMINARY

ment and to Professor Horace Winchell, particularly, who has given much time and technical assistance to the project.



N E C R O L O G Y

KARL LEHMANN was born in 1894 in Rostock, Germany, the son of a professor of jurisprudence. Not yet seventeen years old, he graduated from the *gymnasium*, his many and various interests not having focused up to that time on a particular field of study. But a journey to Munich immediately following graduation proved decisive: his first visit to the Glyptothek, which was to be repeated daily thereafter, gave him the direction of his life. From then on he knew that he must become an archaeologist.

His studies began in Tuebingen, and were continued in Munich and in Goettingen. They were interrupted by the First World War. He served in the Red Cross and later in the German Army as an interpreter, the last two years in Turkey. Here he could take up archaeological research; his first and second publications, one on inscriptions (A.M. 42, 1917), the other on a Byzantine relief (Byzant.-Neogr. Jahrb. I, 1920) were among the fruits of these years. They testify to the range of Karl Lehmann's interests as a young scholar, foreshadowing the characteristic breadth of his whole archaeological career. In 1918, he resumed his studies in archaeology, philology, art history, and philosophy in Berlin, receiving the degree of Doctor of Philosophy in 1922.

During these years, he had already published a series of papers on Roman art, on ancient religion, history, and architecture, and on epigraphy. In 1923 his first book appeared: the renowned study of the ancient Mediterranean ports, "A Contribution to the History of Ancient City Building," to quote its subtitle. The following years were spent in the manner which the German Republic offered to her best and most promising young archaeologists: 1922/23, Fellowship at the Archaeological Institute in Athens, 1924/25, the Assistant Directorship at the Archaeological Institute in Rome. In 1924, only two years after obtaining the Doctor's degree, Karl Lehmann received the coveted "venia legendi" at the University of Berlin. The years in Athens and Rome produced a long series of archaeological papers; their principal result, however, was the book on the Column of Trajan, published in two volumes in 1926. The text has become a standard work on the Roman historical relief, and is one of the few comprehensive studies of Roman art. It is no less a contribution to the understanding of the arts of the Late Antique, long neglected but then emerging as a new field of study.

From 1925 to 1929 Karl Lehmann taught at the University of Heidelberg, then perhaps the liveliest and most progressive German university, where Ludwig Curtius held the chair of Classical Archaeology. In these years Karl Lehmann, together with the sculptor K. Kluge, published the monumental work on ancient bronze statues in three volumes and a large number of articles, in periodicals as well as in Pauly-Wissowa ("Limen," "Staedtebau in Italien und im Roem. Reich"), and learned reviews and contributions to other publications such as Bulle's book on the Greek

theater. In 1929 he was appointed to the chair of Classical Archaeology at the University of Muenster. He held the chair for four years: in 1933 the Hitler regime dismissed him, and Karl Lehmann left Germany for Italy. Here he worked as a private scholar for two years. Even during this incredibly hard time he published various articles, of which his essay on the Palace at the Orti Sallustiani in *Opuscula Archaeologica*, 1935, may be mentioned. A study on Pompeian architecture, begun with his teacher and friend, F. Noack, and continued after his death, could be completed. The book appeared under the imprint of the German Archaeological Institute in 1936, when Karl Lehmann had already left Europe: its preface is dated "New York, 1935."

When Professor Walter Cook offered Karl Lehmann a chair at the Institute of Fine Arts of New York University, he knew that he would add to his distinguished staff of art historians one of the eminent European archaeologists. From 1935 to his death on December 17, 1960, Karl Lehmann taught, at the Institute, classical archaeology and the history of ancient art to generations of students, many of whom now occupy chairs at various American universities. Neither the change to another language nor the different and exacting duties of his new position prevented Karl Lehmann from continuing research and publication: no less than fifty-five papers, two books, one volume of the Samothrace publication, and the guidebook on Samothrace have been published during these twenty-five years. This seems all the more impressive as Karl Lehmann added to teaching and research another activity that was to occupy a central position in his life: excavation work. In 1938 he began his excavation of the Sanctuary of the Great Gods in Samothrace.

Teaching, research, and field work were never three different sectors of Karl Lehmann's life but integrated parts of one whole. Teaching without research would have seemed shallow to him, research without teaching not sufficiently rewarding, and excavation was, from the beginning, not merely specialized research, but also, and eminently, the training ground of his students. He was the first to establish excavations, undertaken by a department of a university, as part of the students' curriculum rather than as a separate enterprise of the excavator. Very many students have benefited from this novel experience in their training, not the least those whose later careers did not lead them to field work. In Samothrace no less than in classes and seminars Karl Lehmann was an inspired and inspiring teacher. Those who were not his students could experience this side of his nature in listening to his frequent public lectures, which were as instructive to the expert as they were fascinating to the layman.

The archaeological world at large knew him by his publications. The pattern set in his earlier, European years developed and extended in the United States. His American publications were mainly in three fields: Greek and Roman architecture, Roman art, and ancient

religion. Roman sculpture and its religious impact were the theme of a book published in 1942, the monograph on the "Dionysiac Sarcophagi in Baltimore," written together with Erling Olsen, his student who was killed in the war. The meaning of Roman painting was examined in his paper on the "Imagines of the Elder Philostratus" (*ArtB* 1941). The symbolic significance of late Roman and early mediaeval art was interpreted, in a novel fashion, in his famous study "The Dome of Heaven" (*ArtB* 1945) and ten years thereafter in his paper on Sta. Costanza (*ArtB* 1955). More and more, however, his interests concentrated on Greek architecture and Greek religion. It was this interest that stimulated him to excavate the Sanctuary in Samothrace. A series of preliminary reports in *AJA* and *Hesperia* as well as a guidebook have given an account of the progress and the results of this excavation, which is among the best known and most important modern enterprises in classical archaeology. The final results are in the process of publication in Bollingen Series LX. The first volume appeared in 1958, volume II, in two parts, toward the end of last year, and two more are in press. Karl Lehmann was the editor of the entire publication; he was also the author of three parts, one of them already published, two to be published shortly. Professor Lehmann planned, as a final volume, a comprehensive study of the history and religion of the Sanctuary of the Great Gods. Death did not permit him to complete this book, in which the research of his life would have culminated.

The excavations in Samothrace, Karl Lehmann's legacy to classical archaeology, will be published in full, edited by Phyllis Williams Lehmann, and the excavation of the Sanctuary will be completed by a younger colleague. At least some of the manuscripts he left will also be published, and there is hope that this will be possible in the near future.

Even such an abbreviated account of Karl Lehmann's contributions to archaeology shows the exceptional range, the vast richness of his work. Unflagging energy, penetrating acumen, imaginative intelligence, and profound learning combined to produce a scholarly output not easily paralleled. The uncompromising scholar and the brilliant teacher were well known to many and respected by all. The colleagues and the students who worked with him admired him, but few could claim to know Karl Lehmann, the person, profoundly. His standards were high and exacting, and he could fight fiercely to uphold them in a lax world. His loyalty to his friends and to his colleagues at the Institute of Fine Arts, which owes so much to him, was deep. So were his devotion to and his love for his new country that gave him much and to which he gave much. They found their clearest expression in his book "Thomas Jefferson, American Humanist," published in 1947. It occupies a significant place in the work of a man whose memory will live long on both sides of the Atlantic.

PETER H. VON BLANCKENHAGEN

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NECROLOGY

LOUISE TAFT SEMPLE, who died at her home in Cincinnati March 27, 1961, will long be missed and mourned by a wide circle of friends and admirers. Daughter of Charles Phelps Taft and Anna Sinton Taft, she was married in 1917 to William Tunstall Semple, who served for forty years as an active member of the faculty of the University of Cincinnati, Professor and Head of the Department of Classics from 1920 to 1950.

Louise Semple brought to her husband's aid a firm belief in the value of classical studies and joined wholeheartedly in his plans for strengthening the department at Cincinnati and broadening its scope.

Her attention was particularly captured by the attractions of archaeology. She was a devoted supporter of the Archaeological Institute of America (a Vice President from 1923 to 1953, and a Benefactor) and its godchild, the American School of Classical Studies at Athens. Agreeing with her husband about the usefulness of proper publication, she joined with him in extending a helping hand to the maintenance of the *American Journal of Archaeology* and the establishment of a more general magazine, *Archaeology*.

She found especial pleasure in the excitement and fascination of actual digging, and took an energetic part in many campaigns of excavation, notably at Troy in the work carried out by the Archaeological Expedition of the University of Cincinnati, which she and her husband founded and sponsored. She was a happy member of the staff, friendly, cheerful, enthusiastic, rarely discouraged, blessed with a lively sense of humor and always ready with a pleasant quip, never in a complaining mood, endowed with unfailing shrewd common sense. Despite some hardships and wants in a simple, though comfortable, camp, remote from the outside world, she enjoyed immensely the open-air life at Troy. She endured the wind and the dust, the cold and the heat of the changing seasons, the daily rising

at early dawn; faithfully kept her notebook day by day, and took her share of extra chores and duties. Her friendliness and good nature endeared her to all her comrades and won her the affection and love of her fellow workers.

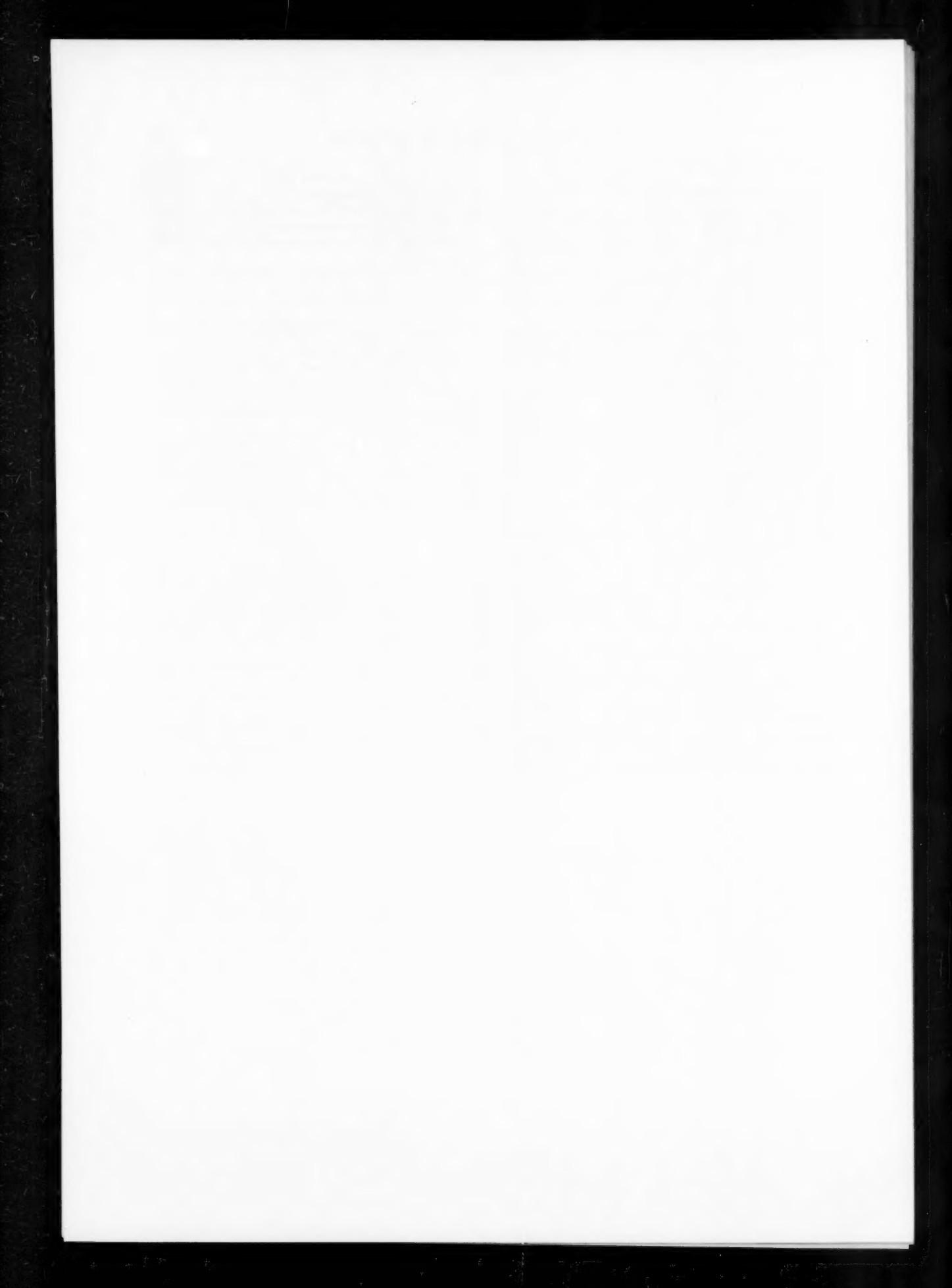
This brief and inadequate archaeological memoir leaves out the high role that Louise Semple played in the civic life of Cincinnati—the many important boards on which she served, her deep constructive interest in the religious, educational, musical and artistic activities of the city, her generous backing of public and private philanthropies, worthy causes and movements, and the more personal help she was able to give to many who needed comfort. She was an outstanding personage in the community who recognized her responsibilities and met them.

But it is Louise Semple, the warm-hearted woman, the cheery friend, the congenial comrade, that will never be forgotten by those who knew her; and they will always treasure the memory of her merry, joyous spirit, and her delight in doing something for others.

CARL W. BLEGEN

It is appropriate to record at this time the gift to the Taft Memorial Fund made by Mrs. Semple in 1959 to set up a trust now valued at three million dollars, of which the Trustees are instructed to pay the net income to the University of Cincinnati. Under the terms of her will, "such income (is) to be used, under the direction of the trustees, solely for the purpose of promoting the study of the classics, such term to be interpreted in its broadest sense as the endeavor to make vital and constructive in the civilization of our country the spiritual, intellectual, and esthetic inheritance we have received from the Greek and Roman civilizations."

THE EDITOR



BOOK REVIEWS

Authors and publishers are respectfully requested to note that all books for review must be sent directly to the review editors: for Old World archaeology to Miss Dorothy K. Hill, The Walters Art Gallery, Baltimore 1, Md.; for New World archaeology to Dr. Richard B. Woodbury, Department of Anthropology, University of Arizona, Tucson, Arizona. The review editors will be glad to receive any suggestions from authors as to names of possible reviewers. Under no circumstances should a book be sent to a specific reviewer.

THE ARCHAEOLOGIST AT WORK. A SOURCE BOOK IN
ARCHAEOLOGICAL METHOD AND INTERPRETATION,
edited by Robert F. Heizer. Pp. xvi + 520. Harper and Brothers, New York, 1959. \$8.00.

This book is a collection of readings intended to help the student who is following a course in archaeology. From more than three or four hundred selections considered, the editor and a group of graduate students have chosen seventy-four readings which cover topics ranging from reconstruction and restoration to subjects of less popular appeal such as ecology and seriation. All deal with some aspect of archaeological method or its interpretation and most are in the field of prehistory.

The editor himself says that they have achieved a "sampling rather than a coverage." If one admits that more than this is impossible in a book of this type covering so wide a field, then the extracts seem well chosen. Most of them are interesting as well as informative. An unusual balance is preserved between sites in America and those in Europe and Asia. Most valuable are the selections taken from books now out of print or not readily accessible to the average student. Of exceptional interest are those taken from the early history of archaeological method such as John Frere's account of the discovery of paleolithic tools in Suffolk, published in 1800, and Thomas Jefferson's description of the excavations in Virginia burial mounds in 1784.

There are, however, some notable omissions that do not seem entirely justified by limitations of space. Radiocarbon dating receives but a passing mention. Despite the difficulties mentioned by Professor Heizer, most prehistoric excavators collect samples for testing by this method and it is constantly under discussion. In the absence of any explanation of the method it is impossible to appreciate those difficulties.

Tantalizing to the expert in the European field is the omission of some major areas of excavation, notably the Aegean and Italy: the former is not mentioned at all while the latter is represented only by an extract from D. H. Lawrence's *Etruscan Places*. Such gaps deprive the student of American archaeology of valuable comparative material, and the student of Mediterranean archaeology is given little incentive to use the book.

Some sections, such as that on seriation and particularly the chapters on the analysis of pottery collections, are likely to prove too difficult for the student who has no actual experience of excavation.

Professor Heizer and his colleagues have, nevertheless, produced a book which should be welcomed by the student of American prehistory. They have made a good job of leavening the technical with a suggestion of the end-product. Best of all they have succeeded in conveying to the reader that the archaeologist's work is done in the spirit of responsibility.

The book is well organized. Each section can stand by itself. The elimination of unnecessary references from the text makes it easy to read while the full bibliography, which supplements references made in the introduction to each section, will satisfy those who wish to read further.

MARY ELIOT

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THE EGYPTIAN BOOK OF THE DEAD. DOCUMENTS IN
THE ORIENTAL INSTITUTE MUSEUM AT THE UNIVERSITY OF CHICAGO, by T. G. Allen. (The University of Chicago, Oriental Institute Publications, vol. 82.) Pp. xxxiii + 289, pls. 131. The University of Chicago Press, Chicago, 1960. \$17.50.

This publication is the product of studies devoted to ancient Egyptian funerary literature that have extended over more than four decades. Together with Allen's *Occurrences of Pyramid Texts* (*SAOC* no. 27) it will be an essential tool for all future research into the Book of the Dead. Unlike the Pyramid Texts and the Coffin Texts, the Book of the Dead has not yet been made available in anything resembling a modern critical edition; nor is such a publication to be expected in the near future. The distinction between the Coffin Texts and the Book of the Dead is a modern one (the lists in Allen, *Occurrences* pp. 110-49, show to what extent the later collection is indebted to the earlier one); the latter term is used to refer to the collections of spells selected from the corpus and usually written on papyrus from the Eighteenth Dynasty onwards. These manuscripts at first showed the same freedom of selection and arrangement that characterizes the Middle Kingdom coffins, but some degree of standardization in both developed in the course of time—though Papyrus Milbank, one of the manuscripts in the Oriental Institute, is quite untypical in this regard, despite its Ptolemaic date. The Book of the Dead continued to be copied, occasionally in Demotic translation, until the end of paganism in Egypt.

The mere bulk of manuscripts preserved from this period makes a definitive edition quoting all the versions in full, a task far exceeding the resources of one scholar. The list of "Non-OIM Documents Cited" on pp. xviii-xxxii of the book under review, or the number of manuscripts of the Book of the Dead included in the list of sources in *Occurrences*, pp. 12-41, gives a rough idea of the amount of material; and neither of these lists attempts complete coverage of even the published documents. In addition, the very considerable amount of textual variation that developed in the Book of the Dead, not all of which can be attributed to the rampant textual corruption inevitable in Middle Egyptian texts copied and recopied for a millennium and a half after Middle Egyptian ceased to be the ordinary means of written communication, is a major obstacle that a critical edition must overcome. Compare, for instance, the two conflicting versions of BD 109 on pp. 183-84 with the corresponding Spell 159 in de Buck, *The Egyptian Coffin Texts*, vol. 2, pp. 363-72. In the latter we find twelve virtually identical manuscripts; over the centuries this text developed widely varying textual traditions, almost as remote from each other as from the Middle Kingdom original.

A definitive edition of the Book of the Dead must thus remain a task for the future. In the meantime, Allen has provided scholars with a valuable tool for further research by editing the seventy manuscripts of the Book of the Dead in the Oriental Institute at Chicago. The two most important ones, Pap. Milbank and Pap. Ryerson, are late and, as it seems, not particularly good witnesses for the text (cf. Allen's discussion of the peculiarities of grammar and spelling, the corruptions, and the arrangement of these manuscripts, on pp. 16-60). However, the fact that Pap. Ryerson contains two spells (BD 191, 192) not previously attested shows that at the present state of our knowledge even late and relatively corrupt manuscripts must be carefully edited and studied. And a text that tells us nothing about the original version of a passage may be a valuable witness to the interpretation of the passage at the time the manuscript was written.

In addition to the detailed description of each of the manuscripts, Allen provides photographic reproductions of all the texts that leave nothing to be desired except in the case of the more poorly preserved *ushabtiu*. The translation and notes that form the bulk of the book are arranged according to the usual numbering of the spells, each manuscript being translated separately, a procedure imposed by the great amount of textual variation.

The translations are the most valuable feature of the book for the non-Egyptologist, who now has at his disposal reliable translations of the greater part of the Book of the Dead. Only Spells 10-14 and 163-190 are missing. As might be expected in the case of manuscripts as poor as these, the bulk of the notes are comments on the text and references to parallel manuscripts without which many passages would remain virtually unintelligible. Where needed, Allen has provided brief comments on the meanings of words, history of the text

or the significance of a passage, but he has wisely refrained from attempting a full commentary, which would be a lifetime's task in itself. The publication of altogether too many important texts has been indefinitely postponed by the desire to publish only with an exhaustive and definitive commentary, and we can be grateful to Allen that he has planned his work on a practicable scale. The vast amount of indexing of parallel manuscripts, of bibliographic references, and of cross-references to parallel passages both in other spells of the Book of the Dead and in the earlier funerary texts, which Allen has provided here and in *Occurrences*, will leave others indebted to him for many years to come.

KLAUS BAER

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MISSION ARCHÉOLOGIQUE DE MARI II, LE PALAIS; DOCUMENTS ET MONUMENTS, by André Parrot, with contributions by M.-Th. Barrelet-Clementel, G. Dosso, P. Ducco, J. Bouchud. (Institut français d'archéologie de Beyrouth. Bibliothèque archéologique et historique, Tome LXX.) Pp. viii + 274, pls. lvi, figs. 132. Geuthner, Paris, 1959.

This is the third volume in the series devoted to the palace of Mari on the upper Euphrates, in which the last king, Zimri-Lim, ruled in the early part of the eighteenth century B.C. Architecture and wall paintings, both published in 1958, precede the present book. This volume contains large and small sculpture (including pottery molds and figurines), jewelry and amulets, mosaics and ornamental coffers, pottery and glyptic art.

It is indeed fortunate that the well known sculptures from the palace of Mari, the harsh and powerful Ishtup-ilum (figs. 1-3 and pls. 1-III), the gracious goddess with her overflowing vase fed by an internal pipe (frontispiece, figs. 4-8, pls. IV-VI), the refined and noble head of an unknown warrior (fig. 9, pls. VII, VIII), and the elegant statue of governor Idi-ilum (figs. 13-19, pls. IX-XI) are now available for study in one volume. They are excellently reproduced with photographs which permit both an appreciation of the aesthetic qualities of the objects and an examination of the factual details. Parrot's sensitive yet precise descriptions guide the reader toward a knowledge of these sculptures which may fall only a little short of that obtainable through a thorough study of the originals.

In discussing the head of the warrior, Parrot suggested that it belonged to a statue representing a king in battle dress. In support of this contention one may mention part of one of the year formulae of Samsuditana, the last king of the Old Babylonian dynasty of Hammurabi, which reads: ". . . year in which he fabricated his statue (showing him) as leader of the royal guards." B. Landsberger, who edited S. I. Feigin's translation of this text in *JNES* 14 (1955) 137-60, added "It is not to be assumed that images of this kind

were dedicated to gods; they presumably were exhibited in the palace" (*op.cit.* 155).

Among the molds for cake and cheese newly published in this book are some with large numbers of lions, dogs, sheep, birds, horned animals and fish, often radially arranged (figs. 34-41). These themes taken from the animal world which surrounded man in the Near East do not appear in other categories of works of art in this period. They demonstrate, as does much of the material from Mari, that there was more variety in Mesopotamian art than is known from the type of objects generally preserved. For example, a new aspect of floor or wall decoration in the second millennium B.C. was revealed by the discovery at Mari of a mosaic mostly composed of shell plaques (p. 106, fig. 76).

Some of the clay objects are tantalizing in the problem which they raise. One cake mold (pl. xviii:1032), for example, known from previous publication (in *Syria* 18 [1937] pl. xii:4), shows in the lower field a stag which a man grasps by one horn, while a small stag appears in the upper field. A dog seems to suggest that this is a hunting scene, yet stags are far too swift to permit a man to catch up with them. Furthermore, very young stags do not have horns, and even when they grow horns they have no tines for one season. A stag with tined antlers would therefore have to be a full-grown animal. Was the artist who made the mold here discussed ignorant of these facts, or did he choose to ignore them? Was the use of the stag motif due merely to aesthetic reasons, such as the appeal of the antlers which somewhat resemble branches of a tree as in pl. xviii:1033, or was there a meaning attached to the stag? To these questions we will probably never learn the answers.

Among the numerous clay figurines included in the book is a group showing a beardless personage with tall polos and necklace with large circular pendant, holding in one hand an axe and in the other an emblem consisting of a short spiral shaft topped by a bird (pl. xxviii:1508, 849, 1010, 1410; p. 67, fig. 54). Though the figure seems so definitely characterized there does not seem to be any textual reference on the basis of which it would be possible to identify this personage, or for that matter any of the other fine clay figurines from Mari, such as the two figures jointly holding a standard (pl. xxx and p. 73, fig. 57), and two drinking figures (pl. xxix:1506; p. 75, fig. 58).

Another important item among the clay objects is a small lion head which served as spout to some vessel (pl. xxxi:983). According to the drawing (p. 76, fig. 59) the head shows the round bosses on the forehead which later characterize some Hittite lion stylizations (cf. the detailed reproductions of lions from Boğazköy and Alaca Hüyük by E. Akurgal in *Spät-hethitische Bildkunst* [Ankara 1959] Abb. 25, 27, 28, 34).

The pottery of Mari reflects the intermediate position of the site in the contemporary occurrence of Mesopotamian and Syro-Palestinian types. Cylinder seals and impressions from the time of Zimri-Lim similarly reflect a fusion of Mesopotamian and Syrian influences.

In the small group of glyptic remains from the time of the governors of Mari, from the twenty-first to the earlier part of the nineteenth century B.C., this trend cannot yet be discerned. This glyptic group, however, is important for its confirmation of the early date of several statues from Mari, that of Idi-ilum, mentioned above, and two almost identical statues found at Babylon, of which one bears inscriptions naming Puzur-Ishtar, governor of Mari, as well as Tura-Dagan, his father, for whom the son probably had the statue made (p. 16, fig. 12; earlier, E. Nassouhi, "Statue d'un dieu de Mari," *AJO* 3 [1926] 109ff; also W. Nagel, "Die Statue eines neusumerischen Gottkönigs," *ZA NF* 19[53] [1959] 261-65; excellent photographs in Parrot, *Sumer* [Gallimard 1960] 268-69). These statues are closely related stylistically and have been dated on general grounds in the early Isin Larsa period (Parrot in the present book, p. 21, and notes 1-3; Henri Frankfort, *The Art and Architecture of the Ancient Orient* [Pelican History of Art 1955] 58, s.v. pls. 61C and 60).

Too little appears to have been preserved for reproduction of the seal impression which might have been that of Puzur-Ishtar (ME 68, pp. 158 and 252), but two imprints are ascribed to his father Tura-Dagan. One of these (pl. xlvi:56) shows a god in ascending posture holding a plow, and recalling the representation of the same motif on a cylinder in the Morgan Library (*Corpus of Ancient Near Eastern Seals I* [New York 1948] No. 290). The latter cylinder also shows a libation over hourglass-shaped altars recalling in abbreviated manner a theme of one of the murals of Mari (Parrot, *Mission arch. de Mari II/2*, pl. E). The Morgan cylinder which recalls earlier Sargonid prototypes in the motif, size and spacing of the figures, had seemed out of place among Mesopotamian cylinders of the neo-Sumerian period. The imprint of Tura-Dagan now shows that it must have belonged to a local style of Mari.

The second imprint ascribed to Tura-Dagan consists of the fragmentary figures of a suppliant goddess and of a bearded, turbaned worshiper rendered in a manner typical of the latter part of the Isin Larsa period. Posture and attire of the figures are similar to those seen on a cylinder in Boston (Frankfort, *Cylinder Seals* [London 1939] pl. xxvii b) which I take to bear the inscription of an official of Naram-Sin of Eshunna and to be dated approximately in the third quarter of the nineteenth century B.C. Tura-Dagan, father of Puzur-Ishtar, however, would have lived almost two centuries earlier, if we accept F. Thureau Dangin's identification (*RA* 34 [1937] 173) of our Puzur Ishtar with one mentioned in the second year of Ibi-Sin, last king of the Third Dynasty of Ur, whose reign ended about 2000 B.C. It may therefore be suggested that the element *Tura* in the inscription of the imprint under discussion, which is a reconstruction (cf. p. 251: ME 14), is erroneous and that the imprint belonged to some other later governor whose name was also compounded with that of the god Dagan.

The style and subject of the cylinder seal of an offi-

cial of governor Idi-ilum (pl. XXXIX:1400), owner of the small headless statue mentioned above, also point to an origin in the time of the Third Dynasty of Ur or close to that time. Though the manner in which the cuneiform signs of the inscription were pressed into the available space left by the presentation scene shows that they were engraved later than the scene, unique features of the latter indicate that it was carved according to specifications of an individual. They are the knife-like object in the hand of the enthroned goddess and a staff in the hand of the worshiper. This does not prove that the inscription and the seal design were cut at the request of the same person, but it is possible. The dating evidence for the statues of Idi-ilum and Puzur Ishtar is accordingly tenuous, but tends to favor an early date about 2000 B.C. previously established by Parrot, Frankfort and Nagel. In terms of the development of style this means a restatement of the fact that the consummate elegance of Puzur Ishtar and Idi-ilum continued the artistic excellence of the Third Dynasty of Ur, and preceded the provincial and heavy-set statue of Ishtup-ilum, produced during a period which may have been one of temporary artistic regression.

A burst of artistic activity occurred in the time of Mari's last king Zimri-Lim. In part this activity may have been linked to this ruler's pressing need for divine help against his adversary Hammurabi of Babylon, to which Parrot ascribed the making of the great mural of the investiture (*Studia Mariana* [Leiden 1950] 39, 40). In part, the central position which Mari occupied politically among the countries of the Near East in the early second millennium B.C. accounts for a greater variety of subject matter than can be found on the imprints from Babylonian towns of the eighteenth and seventeenth centuries B.C.¹ Moreover, there may have been at Mari a continuing artistic tradition from the period of the Akkad dynasty, which Parrot and Mme. Barrelet imply when they refer to the stele of Naram-Sin for the prototype of the conquering god who tramples upon the country's enemies in the glyptic designs of Zimri-Lim's courtiers (p. 189, note 9).

One of the most significant aspects of the glyptic art of Zimri-Lim's court is the presence of Syrian motifs. Of these the most common is the guilloche, usually formed of three separate strains, often with a small dot in each loop. One cannot help but observe the related rendering of undulating bands on one imprint obviously signifying water (pl. XLVIII:43) and wonder once again whether a similar meaning could not have pertained to the guilloche, especially when it appears between two figures as in the imprint of Queen Shiptu, pl. XLVI:69. The linear rendering of the guilloche here described may serve as a criterion of an

¹ In addition to the glyptic material published in the present book, several cylinders can be assigned to an origin in Mari because the seal owner named in the inscription could be identified with one of the persons known from the Mari texts. The best known is the cylinder of an official of Zimri-Lim in The Hague, J. Menant, *Catalogue des cylindres orientaux . . . la Haye* (La Haye 1878) pl. v:25 (republished with the same poor

early date. Later these designs become more elaborate or simplified.

Other Syrian designs consist of single figures such as the goddess with mantle withdrawn (pl. XLVIII:71a and comments p. 169 and note 1), though the tambourine attached to her wrist is not paralleled in Syrian seals (cf. however the authors' comment, *ibid.*, concerning this feature in clay plaques of nude female figures). The figure offering a gazelle by holding the animal by the neck is known from Syrian cylinders assigned to the First Group (*Corpus* No. 931; cf. also the authors' reference, p. 169, note 2, to an incised design on a large vessel). The god with a multiple scourge may be the prototype for later representations of a figure with a two-looped emblem or scourge as in the cylinder, *OIP* XXXVII, No. 93, and subsequently the emblem depicted on scarabs showing Hyksos rulers (collected by O. Tufnell in *AnatStud* 6 [1956] 68, fig. 1:1-4, 11), and perhaps even the so-called *lituus* on Syrian cylinders (e.g. *Corpus* Nos. 915, 980 and *OIP* xxii, Nos. 325, 337) and finally, carried in the opposite direction on Hittite monuments (e.g. H. T. Bossert, *Altanatolien* [Berlin 1942] 112, No. 505, 113, No. 507). This example serves to illustrate the basic importance which the subjects rendered in Mari probably had for the later development of Syrian glyptic art. The absence, however, of Egyptian filling motifs, of a weather god with pointed helmet, of a warrior goddess with square miter, of figures wrapped in long cloaks with thick rolled borders, all of which are distinctive elements of the Syrian repertory, is very noticeable. It will be interesting to see from the publication of other glyptic material, such as that excavated by C. F. A. Schaeffer at Ras Shamra, whether the reason for the absence of the motifs just noted from the glyptic repertory of Mari are chronological or regional.

In a future volume of *Syria* there will appear composite drawings of the impressions which will make it much easier to study them. It will become obvious at that time that the same cylinder which was used to seal the Mari tablet reproduced in the present book on pls. XLIII, XLIV, and p. 213, fig. 115, was also used to seal a tablet in the thirtieth year of Hammurabi's son Samsu-iluna at Sippar, many years after the palace of Mari had been pillaged and burnt. The Sippar tablet, which is one of three similar ones, records the division of property among seven brothers (cf. the remarks and references by A. Goetze in *JCS* 11 [1957] 77, and the drawing and discussion by B. Buchanan, *op.cit.* 74ff.). The principal motif of the imprint is a bull fallen or kneeling on its forelegs, supporting on its back a structure which two creatures floating in the air seem to grasp. Buchanan drew a figure standing within the enclosure which I cannot make out clearly in the photo-

photograph by A. Zadoks-Josephus Jitta and R. Franken, *Catalogue sommaire . . . cabinet royal des médailles à la Haye* [La Haye 1952] pl. III:61). A seal of an official of Zimri-Lim's grandfather Iagrit-Lim (called Iabdu-Lim in the present book) was published by E. Weidner in *AJO* 18 (1957) 122-23. Four cylinders of the time of Zimri-Lim in the collection of the Louvre were identified by R. Kupper, *RA* 53 (1959) 97-100.

graphs of the impression from Mari but which would agree with the representations in the Early Syrian cylinder to which he refers (*ibid.* note 3). The bull is grasped by the horn by a figure in long pleated robe, brandishing a weapon. Parrot was immediately reminded by this representation of the fragmentary stele, pl. xiv:1416, p. 28, fig. 24, which I associated many years ago with the episode of the Gilgamesh epic in which the hero kills the bull of heaven to relieve the drought in the land (*RA* 36 [1939] 96-97). In the present book Parrot takes issue with this interpretation, among others, on the basis that Gilgamesh could not have been represented with a divine miter. While I would no longer maintain the association of this and related scenes with the Gilgamesh epic on the slim evidence available, the fact alone that the bull's attacker wears a divine horned miter is probably immaterial, since we have no written description of Gilgamesh or of any other mythological figure (except perhaps Enkidu), and figures of Mesopotamian mythology were probably rendered in different guises depending on the context of the scene in which they appeared. Like Parrot, I now believe that the bull of the stele carries an edifice on its back, continuing thereby a theme which is first found in Late Early Dynastic and Early Akkadian cylinder seals from Mesopotamia, such as the one from Nippur (*ILN*, Aug. 18, 1956, 269, fig. 19) and the one from Ur (L. Legrain, *Ur Exc. X, Seal Cylinders* [1951] No. 228). In the latter rendering two small figures float on either side of the structure on the back of the winged bull, holding bands attached to that structure. This surely suggests that the structure on the back of the bull is of a celestial nature, and I am still of the opinion that the kneeling bull, too, carrying a winged structure before a seated goddess on cylinders of the Akkad period (e.g. Legrain, *op.cit.* No. 227 and Frankfort, *Cylinder Seals* pl. xxii g, i) was correctly interpreted by Frankfort as showing the goddess Ishtar holding the bull of Heaven by a rein.

The importance of the Mari imprint lies not so much in the more or less correct interpretation which we may guess from the pictorial context of this and other renderings. Rather, it lies in the fact that, with some pictorial modifications, we can follow a mythological motif from the Late Early Dynastic and Akkad periods, in which we can expect no explanatory literary texts, into the Mari age when such texts, or at least textual references, might appear. Let us hope that M. Parrot will find some such references in one of his future campaigns at the rich and rewarding site of Mari.

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THE PREHISTORIC CHAMBER TOMBS OF FRANCE, by
Glyn Daniel. Pp. xx + 282, figs. 77, pls. 32.
Thames and Hudson, London, 1960. 70s.

The sub-title of this book, "A Geographical, Morphological and Chronological Survey," indicates its scope

and limitations. It presents a survey and analysis of the collective chambered tombs of France, architectural monuments of the Neolithic and earlier metal-using communities of that country with a date centered on ca. 2000 B.C. It is not, and does not set out to be, an exhaustive and complete inventory of every one of the five or six thousand such tombs which are estimated to exist in France. Eventually, one would like to think (but without much real hope) that a French survey might be made with the degree of detail of that initiated, and so largely carried through, by the Leisners in Iberia; in the meantime Daniel has produced an invaluable interim report on a great group of prehistoric monuments previously unpublished save in scattered and often obscure publications: his bibliography of over 900 items is some indication of the diffuseness of the literature. Any major inventory would have to be the work of a team, as the task is far beyond the powers of a single individual, but in the present book we have at last a statement in comprehensible terms of the essential material, based not merely on the literature, but on the author's extensive and painstaking field work.

After an historical résumé of the previous work on the subject, the main body of the book consists of a regional survey divided into seven natural regions. In each area the main architectural types of tomb are described and illustrated with plans and, where possible, distribution maps, so that by a process of sampling we are able to build up a picture of the major patterns over the whole country. To a lesser extent we are also enabled to see something of the relationships between the tombs and the variant aspects of material culture, as exemplified by the grave goods from such sites as have been excavated and from which the material has been published or survives. A final chapter of conclusions brings together the evidence for the significance and interrelation of the architectural types represented in the tombs, and attempts a relative and absolute chronology in terms of the archaeological correlations where these can be established.

This part of the book is, as the author frankly admits, the least satisfactory. There are several reasons why this should be so, but one (tactfully implied by Daniel on more than one occasion) is fundamental: the low standards of archaeological excavation and publication in France not only in the past, but at the present time. It is sometimes forgotten that the validity of almost all archaeological interpretation is in direct proportion to the degree of reliability of the excavation reports on which it has to be based. For the monuments under discussion we have no excavations, nor reports, approaching the standards which have been current for a generation in some at least of the other countries containing analogous chambered tombs. And this lack of reliable basic knowledge is not confined to the tombs, for the general culture sequence of the French Neolithic and Early Bronze Age is no more than a piece of schematic guesswork in the absence of dependable evidence.

Daniel has however attempted a chronology, and

has set out five periods, ranging from ca. 2300 (?) to ca. 750 B.C., during which there is evidence for chambered tomb construction and use. As his book went to press, new radio-carbon dates were becoming available which have forced us to reconsider our schemes of absolute chronology for the Western European Neolithic cultures, and it appears that we were all working on too short a scale. It now looks as though many tombs must have been built in the third millennium B.C., and some near its beginning; this is concordant with the dates of around 3000 B.C. for such cultures as Cortaillod or Windmill Hill. We need many more radio-carbon dates before we can make detailed revisions, but the general trend seems clear.

A special word of praise must be given to the plans and maps which form such a necessary part of the book, the work of Mrs. Daniel. The maps in particular have a clarity and elegance which the publishers have brought into a harmonious relationship with the typography and layout, so that the book not only informs, but delights.

STUART PIGGOTT

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DIE GLASARMRINGE UND RINGPERLEN DER MITTEL-
UND SPÄTATÈNEZEIT AUF DEM EUROPÄISCHEN
FESTLAND, by Thea Elisabeth Haevernick, with a
contribution by Paula Hahn-Weinheimer. (Römis-
ch-Germanische Kommission des Deutschen Ar-
chäologischen Instituts zu Frankfurt A.M.). Pp.
x + 302, pls. 35, tables 5. Rudolf Habelt Verlag,
Bonn, 1960.

By making a thorough, painstaking study of a large and often misunderstood group of objects, Dr. Haevernick has added a sizable foundation stone to the knowledge of ancient glass. This group of objects consists of glass bracelets and "ring-beads" which have been found over a wide area on the European continent in contexts of the Middle and Late LaTène period.

Dr. Haevernick's treatment is well organized and easy to follow. After a general introduction she discusses technique: the consistency of the glass, its coloring, the raw materials used, workshops, methods of manufacture, tools, etc. The manufacturing technique is ingeniously and convincingly explained: a blob of glass was swung in circles at the end of a rod until the bracelet was formed by centrifugal force. This means that only the most primitive equipment was necessary, and that the bracelets could be—and probably were—manufactured almost anywhere. The decoration consists of various sorts of tooling, as well as applied threads and spots of another color. These bracelets, although sometimes confused with those usually called "Roman" (actually of various origins), are in reality easy to distinguish, as the author points out, for the later specimens are made from a glass band or

rod bent into circular shape, so that a seam or overlap is visible.

The LaTène bracelets and beads are classified by profile and decoration into twenty-five groups (some with subdivisions), and within these they are arranged geographically. Both published and unpublished pieces are included, providing as exhaustive a treatment as could be hoped for.

Subsequent to the classification, the author discusses the use and method of wearing these rings, pointing out that the bracelets, which were worn on the lower arm, have been found chiefly in women's graves, rarely in those of men. The ring-beads may have been amulets. The bracelets are occasionally found in Roman graves and have sometimes been thought to belong to that period, but it is reasonably certain that these pieces were heirlooms. Interestingly enough, they are also occasionally found in Merovingian graves. Since most of these objects are blue in color, Dr. Haevernick suggests that they may have been considered apotropaic, as blue beads still are today.

In a chapter on chronology and cultural classification, the author demolishes various theories and shows that the rings are rightly designated as Celtic, judging both from their distribution and from the fact that they appear at the same time as the Celts. They first turn up around the beginning of the fourth century B.C.; the date of their latest manufacture is not certain. Although various Celtic tribes have been distinguished, it has not been possible to assign the rings to specific groups.

Not the least valuable part of the book—and one which should be widely imitated—is that which contains 34 maps showing the distribution on the continent of the 25 groups of rings, and a final map which summarizes the overall distribution of the whole body of material. This clear presentation brings the discussion into focus and enables one to grasp the rather complicated story. The plates, where the profile of each ring is shown beside its photograph, and the final plates showing types, are likewise exemplary.

In presenting a spectrochemical analysis of the glass, Dr. Paula Hahn-Weinheimer emphasizes the small number of objects which could be analyzed as contrasted with the huge amount in existence, and therefore offers the results as essentially tentative.

In her Introduction Dr. Haevernick deplores the fact that a general history of ancient glass is lacking, and that we still must depend on Kisa's handbook. But one wonders if the time is ripe for a general study. It is just such books as the one under review which will make a general history of glass possible, and others are still needed. Dr. Haevernick raises many questions concerning glass origins, commerce, chronology, etc., all of which must first be answered if a history of glass is to mean anything.

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EARLY MEDITERRANEAN MIGRATIONS. An Essay in Archaeological Interpretation, by *T. Burton-Brown*. Pp. x + 76, figs. 17, pls. 2. The Manchester University Press, Manchester 1959; Barnes and Noble, Inc., New York. \$3.75.

This essay in three chapters is combined courage and irritation. As an entrant in a complicated and now closely-observed field, it has the advantages of wide range and suggestiveness, the disadvantages of superficiality, weak documentation, and some wildness. From small beginnings—a catalogue of several pieces of "intrusive" pottery now in the Manchester Museum from Sir Flinders Petrie's excavations at Kahun in the upper Nile Delta—Mr. Burton-Brown expands to a bold broad theory about movements of Mediterranean peoples from east to west in the third and second millennia B.C. His commentary extends from his own excavations in Azerbaijan through Mesopotamia and Syria to Egypt, and later onward to Greece, Etruria, and finally the Saxons in England of the fifth century A.D.

His stimulus is the group of un-Egyptian ceramic details in the Kahun finds—not the better known painted wares with Aegean parallels of Petrie's *Illahun, Kahun and Gurob* pl. 1, but the plain and incised fabrics which, being less showy or obvious, have suffered neglect; he connects isolated details of these depressing pots with the wares of other regions at dates varying from 3500 to 800 B.C. and offers an explanation of how these details may have turned up so widely scattered. Although not many students will be able to follow his arguments easily or with confidence, they must admire his ability to transmute this material into imposing theory, and should find his crowd of parallels provocative and often informative.

First, five mild criticisms on the technical side. 1) The bibliography is disjointed and in part seriously out of date. Trojan parallels, for example, are quoted from Schmidt's *Schliemann's Sammlung* without any reinforcement from the absolutely necessary reports of Blegen; Tarsus is represented by Miss Goldman's preliminary reports in *AJA*, not the final publication; Schachermeyr has not been read, Mellaart only in part; none of Frankfort's or Braidwood's studies in pottery are mentioned; among the more startling omissions are Ehrich's *Relative Chronologies* with its various pertinent contributions, and Kantor's *Aegean and Orient*.

2) The references are sometimes inexact, and the parallels quite often unconvincing. One example of each. The pilgrim flask from a Twelfth Dynasty context at Kahun is bound to interest Aegean specialists, but the reference to *Phylakopi* pl. nine:two (surely he means pl. nine:eleven?) puzzles; the excavators describe the fragment as coming from a Cycladic spouted jug with a sharp fish-spine. B-B's pl. 1, a monochrome baggy jar without handles, 4 $\frac{1}{4}$ " high, does not to the uninstructed eye closely resemble the sharp-profiled,

ledge-handled, Matt-painted Pithos, 27 cm. high, of *Phylakopi* pl. VIII.4.

3) Time and Space. The chronology is loose—not the absolute system B-B follows, because that is nowhere expressed, but the use of parallels at great distance in time without precision or coordination. E.g., "Tall vases with horizontal ridges are rare. The best known examples are from Troy I and from early levels at Alishar . . . It might be reasonable to suppose that the Kahun example is a late descendant of the tradition" (29). In space, we would like more detail in such statements as "There is the pyxis from Kahun of a type which appears likely to have come from the Caucasus, as it is well known there, and from which the Early Minoan examples could easily have been derived" (35).

4) The illustrations are disappointing for the author's purpose, line drawings without shading to suggest fabric. Fabric is described in the catalogue, but details of shape are not. This small incompleteness in presentation connects with B-B's disconcerting habit of isolating special details for his parallels—a handle here, a base there—as though the total appearance of a pot were insignificant. Once in a while this surgical observation may lead to new ideas, but one ought not so consistently divorce part of a form from the whole form, or form entirely from fabric. E.g., in discussing the novel appearance of the ring-based bowl in Egypt, he adduces a parallel from Ras Shamra: "One of the Meydum examples has a ring-base, and the Ras-Shamra bowl was found with a vase which had a ring-base" (6). Some may have to read this twice to see that the parallel does not have the vital detail.

5) The index is very incomplete.

But these are mere workmanly frustrations, not flaws necessarily fatal to the argument. With patience and a hundred books spread out, one may observe many new thoughts which B-B puts forward with caution and imagination. His list of "foreign" details in the early second millennium includes polychrome decoration, spiral motifs, trefoil lips, torques, kernoi and multiple vases, red-polished ware, incised white-filled grey ware, askoi, ring-bases, bowls with incurved rims, cloisonné work, and a kind of proto-alphabet. After finding a probable source and extension for each of these innovations, B-B combines the varied evidence into a theory that small groups of people streamed out of the Caucasus at different times, bringing recognizable habits of mind along with their recognizable pots. They brought Minyan ware to Anatolia and Greece, Cycladic ware to the islands, Middle Minoan polychromy to Crete. The simplicity of many key designs and forms (triangles, handles), and the good chance of their local development by any naturally sensible group, is treated lightly; each change in ceramic repertoire is attributed to a new influx from the northeast.

This Caucasian theory is bolstered by rather charming remarks on trade and influence (51, 58) including a vignette of reluctant Kul Tepe buyers confronted

with Assyrian fashions in textiles; it leads to reconstructions of the psychological characteristics of B-B's wandering easterners—the "clearheadedness and foresight" they brought to Egypt in the Twelfth Dynasty, the heroic qualities in their writing ("Sinuhe"). But when these qualities, and the pots that travelled with them, are discerned in other regions and later days one's instinct is for withdrawal if not total rejection. This is the case when the poetry of Homer, and indeed all European saga, is "indicative of repeated appearances of a particular people" (the authors of "Sinuhe") (63); when the fluted columns of Beni Hasan are linked to the temples of fifth century Greece (Caucasians coming to the Nile valley in Dynasties III, XII, and XVIII, and then to Greece in the eighth century B.C.) (65); when the cloisonné work and granulation of Middle Kingdom jewelry are attributed to an ethnic talent later reappearing among the Etruscans, Saxons, and Celts (68-69). This is a parlor game anyone with an eye and half a training can play: try the ivory plaque from Nimrud in New York with prince and flowing water, and the Limoges Baptism of Christ in Boston.

To an innocent classicist the most startling news may be that, because of the "signs" incised on an oval dish from Kahun, which might be related to the South Semitic alphabet were it not for the disparity in date, we find that "proto-Greeks" from the Caucasus were much more advanced than we had thought: "some variety of Greek peoples using an early form of alphabet were established in the lands north of Syria and Mesopotamia by the beginning of the Second Millennium B.C." (67). Here is the same mixture of serious confusion and suggestiveness that characterizes the entire book. The author postulates a hitherto unrecorded system of writing from which South Semitic, Phoenician, and Greek systems are all derived; he calls it an alphabet because of faint resemblance on the Kahun plate to "B, K, and N" of South Semitic; he is silent about what language this alphabet is supposed to write; he is sure that the writing is foreign, not for historical or formal reasons, but because the oval dishes of the large Kahun series have not been found anywhere else but in Egypt, where they are new and therefore foreign: "it does not seem to have come from any archaeologically known land and is therefore probably of northern or eastern origin" (36). At this point one would throw the book away in despair at such a mockery of scholarship, were it not for the other, very interesting, potters' marks from Kahun which our author does not mention (Petrie, *Illahun, Kahun, Gurob* p. 11 and pl. 15; *Kahun, Gurob*, and *Hawara* p. 43 and pl. 27), followed by a similar series of marks on Eighteenth Dynasty pottery from Gurob; some of these signs are surely extraneous to Egypt, and seem to represent the kind of awakening awareness about writing which similar potmarks from Lerna and Kourion suggest during the latter part of the Second Intermediate Period. But potters' marks are not writing, let alone alphabets, and while Burton-

Brown has performed a useful service in recalling these Nilotic scratches to our attention, on the whole one would prefer to let his B, K, and N stand for Burton-Brown, Kahun, Non Nobis.

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FOUILLES EXÉCUTÉES À MALLIA. Exploration des maisons et quartiers d'habitation (1948-1954). Deuxième fascicule, by Jean Deshayes and André Desenne. (École française d'Athènes. Études crétoises, Tome XI.) Pp. ix + 161, plans vii, pls. LXXIV, frontispiece. Paris, Geuthner, 1959. 80 N.F.

This second volume on the houses at Mallia presents three structures and the finds from them: Houses Z β and Z γ in the quarter to the east of the palace (Z α was published in the first volume) and the very large "villa," House E, to the south of the palace. M. Deshayes' descriptions of the two houses in Quarter Z and those of M. Desenne for House E are both careful and complete; for the two former buildings there are restored plans as well as actual state plans, for the latter only an actual state plan. A restored plan of House E, showing the walls of the three periods of occupation, would have been most helpful in understanding its complexities.

House Z β has but one period of construction, that of the Second Palace (MM III-LM I), yet the anomalies of plan suggest that the quite rectangular northern half of the house, similar to the general plan of Houses Z α and E, may be the original part and the rooms with an oblique orientation in the south half a later addition. It is not clear if the walls between the two sections bond; on the plan it would appear that those of the south half do not bond with the long east-west wall forming the south side of the rectangle. There may be other explanations for this eccentricity, such as earlier roads or buildings along the east side of House Z β , but it is tempting to see in this house a structure originally rectangular like its neighbor Z α .

Like so many Mallia houses, House Z γ had an original period of construction in the First Palace period (EM III-MM I) and was then reconstructed in the second period. It is not sure if in the first period there was a single house or a series of two- or three-room units. This plan may also have had a rectangular core to which additions were made to the south, perhaps also to the west. Both room XVII in House Z β and room I in House Z γ have a column at the center, an unusual feature in Minoan architecture, in which a center pier is more common. The former room is the communication center of House Z β , almost like a central court except that it was roofed.

House E is a much more exceptional building; its great size (50 x 28 m.), makes it considerably larger than the Little Palace at Knossos but smaller than the

Haghia Triada summer palace. While it shows the two periods usual at Mallia, First and Second Palace, it also was partially reoccupied in LM III and is the only building showing occupation in this period. Unique, too, at Mallia are the frescoes found in the southern part of the structure, for the palace is singularly devoid of such decoration. It seems incredible that no second storey is mentioned; the complex in the northwest corner especially, with its row of small storerooms, forms a large rectangle of the type usually occupied by a suite of large rooms on the second floor. In this connection, is not the column in the line of the wall bordering the south side of corridor I meant to help support a girder that was part of the second-storey structure? Also, a stairway in this corridor leading to the second floor is not impossible; its position with respect to the main entrance and the general plan is comparable to that in House Zβ. The large "lustral basin" and the impluvium court in the southern half of the house are typical of "palatial" structures. Notable also is the exceptionally fine workmanship, as illustrated in the carefully made column bases, showing anathyrosis that provided a roughened setting for the wooden columns in order to prevent slippage.

The three houses have yielded large quantities of pottery, a little of the first period, much more of the second and, in House E, a large amount of LM III. Some of the decorated pieces are of excellent quality, such as the fine LM Ib oenochoe illustrated in the frontispiece, and are indicative of the wealth of the inhabitants of Mallia during the Second Palace period. Fine stone vessels and lamps, a profusion of metal-work, seals, an ivory appliqué of a sphinx and, finally, the frescoes of House E, decorated with a metope panel and stylized flowers, are further indicative of the richness of Minoan life at its height.

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EIN FRÜHATTISCHER GRABFUND, by Roland Hampe.
Pp. 91, pls. 27. Verlag des Römisch-Germanischen
Zentralmuseums, Mainz, 1960.

In 1949 the Archaeological Seminar of the University of Mainz bought on faith a box of sherds, hundreds of them, tiny, unsightly from burning and peeling, the number and kind of vases unknown, their provenience mislaid by the dealer who offered them. Following eight years of delicate mending and restoration, the results were unveiled in *CVA* Mainz 1, pls. 8-26 (1959). The sherds appear to have come from a single Attic *Opferrinne* of the early seventh century B.C. Included were three monumental Early Protoattic kraters on high conical foot, two slightly smaller, fragments from others and a few smaller vases.

This new monograph treats only the five better preserved kraters. Every aspect of their reconstruction, manufacture, figured scenes and use is investigated.

It is a handsome volume, popular in format, and with its lavish illustrations virtually self-contained; ten pages of supplementary notes provide rich documentation in lieu of footnotes.

The kraters are showpieces, fragile and gaudy, made exclusively for funeral use. Their size is exceptional, the larger, H. 1.30 m., capacity 38 liters; only the smaller were glazed inside to hold liquid. The prototypes for their form are carefully traced. Adapted from the newly introduced oriental metal cauldron, it retains the ring-handles of the old tripod lebes, now with lotos finial. Plastic snakes and ornamental rivet-heads encrust the lip; the stands are richly profiled above, two with cut-outs below.

Decorated zones covering the whole surface make liberal use of white and rust-red; light-on-dark is common. Figured scenes echo the occasion: doomed warriors, waiting sphinxes (Keres), vultures and dogs, *ekphora* and mourners, ritual chariot processions. Floral ornament and traditional rectilinear motives are juxtaposed. The kraters have just passed into the Protoattic realm; pure Late Geometric pieces were still being made (e.g. Athens N.M. 810, of similar form).

Three painters, and perhaps a fourth, decorated the five, all works of one master potter: the Analatos Painter, the N-Painter and the Passas Painter, newly isolated by H., his name piece in an Athenian private collection, regrettably unpublished. The personality and mannerisms of each painter are simply defined; I know of no more painless introduction to the intricacies of "hands" in this period of ferment.

H.'s reconstruction of the funeral ritual as illuminated by the complex remains at the Kerameikos is especially welcome pending the appearance of Kübler's discussion in *Kerameikos*, VI, 2. H. assigns the burning of the offerings above the *Opferrinne* to memorial services of the ninth day. This interval is required only if one assumes that elaborate funeral vases were commissioned at time of death. More evidence seems desirable. One feature, said to be new to the ritual at the end of the eighth century, should now be modified. Cremation of the body above a prepared cist is well attested at Eleusis in the early eighth century (*Praktika* 1955 [1960] 75), and as early as the tenth century at the Athenian Agora; the Kerameikos is peculiar in its lack of early evidence for this practice.

H.'s account is simple and direct, and expresses a justifiable pride of accomplishment in the recovery of these spectacular vases. The specialist will read it for enjoyment and profit; the student and layman will find an attractive introduction to ancient and modern technical problems concerning pottery, and a compelling insight into life and death in the seventh century B.C.

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KOUROI. Archaic Greek Youths, a Study of the Development of the Kouros Type in Greek Sculpture.

ture, by Gisela M.A. Richter. Pp. xiv + 342, figs. 564. 2nd ed. New York, Phaidon Press, 1960.

This is the eagerly awaited second edition of a work that has already become a classic. *Kouroi* (1942) appeared during the war and soon went out of print. In *Kouroi*², a handsome Phaidon quarto, the number of monuments included has grown by more than a third; the number of illustrations has more than doubled. The book is essentially an application of the method of anatomical analysis to the chronology of archaic Greek sculpture. Miss Richter places little stock in regional style. She believes that kouroi evolved with uniformity throughout the Greek world and recognizes only the broad distinction between East and West. The validity of this view has been questioned (R. M. Cook, *JHS* 65 [1945] 121f) and will no doubt be debated again.

The introduction remains essentially unchanged. There are valuable discussions of the literary evidence and of the technique. There is also a summary of the anatomical analysis, with tabulated results. The islands and the Greek East are favored over Crete as the birthplace of Greek monumental sculpture. The six main chapters correspond to six chronological groups. Each chapter contains a summary of the distribution, an anatomical characterization of the group as a whole, and a catalogue section with an anatomical analysis for each entry.

A few items may be commented upon individually inasmuch as their dating or localization present problems that seem to require further discussion. No. 19, for example, the head of a kouros in Leyden, appears to me to belong in the second quarter of the sixth century, not in the very early Sounion Group (cf. also Raubitschek, *Archaeology* [1953] 188). May one not compare this head to no. 50, the one from Naxos in Copenhagen? Remounting the Leyden head with less of a backward tilt might correct the "early" impression imparted by the photographs. No. 20, the wooden head with a tang from Samos would seem to belong with the "forerunners." The triangular formation of the head is in the orientalizing tradition of the "Mantiklos Apollo." Note the Assyrianizing formation of the hair. The Italic origin claimed by V. Poulsen (From the Collections, etc., II [1932] 102f) for no. 26, the bronze kouros in Stockholm (generally thought to be Ionian), is confirmed by the Italian provenance of a similar bronze in Hamburg, Museum für Kunst und Gewerbe, inv. 1917, 360 (ex coll. Adami, Bari, unpublished).

Perhaps the most noteworthy newcomer to the Melos Group (ca. 555-540 B.C.) is the marble kouros now in Cleveland, Ohio, inserted between nos. 132 and 133. Lingering doubts about the authenticity of this remarkable work vanished vis-à-vis the original at the exhibition of Greek art held in Basel during the summer of 1960. Cahn and Schefold, in their respective publications (see *Kouroi*², 112) considered this kouros to be Parian, about 550 B.C. I hold it to be Attic, of

imported island marble. Compare the torso to that of the Rampin Horseman, especially the horseshoe-like lower boundary of the thorax, the bow-shaped clavicle, the shallow, yet meticulous, modeling of the abdominal muscles. A comparison of the back with the back of the kouros from Volomandra is also revealing. Miss Richter's classification of the Istanbul head (Melos Group no. 127) has recently been dramatically corroborated by Eckstein and Buschor's discovery that the head joins a torso in the Vathy Museum, Melos Group no. 120. No. 161 bis, the torso of a kouros found in the Themistoklean wall in 1953 and now in the Kerameikos Museum, is surely Attic and not Samian as recently suggested by Buschor (*Altsamische Standbilder* IV [1960] 71f). The fleshy voluminous forms of this sculpture recall the Rayet head. Miss Richter's classification of no. 159 bis, the bronze Apollo recently found at Piraeus, is very convincing (early Ptoon 20 Group. Cf. also E. Vanderpool, *AJA* 64 [1960] 266). No. 158, the Baker bronze, has recently been shown to be Samian by Buschor, who compares the piece with the bronze kouros from Samos in Berlin (*op.cit.* 70f). No satisfactory explanation of the attribute the figure holds has yet been offered. I venture a guess that the object is a mace or a scepter.

A series of monuments towards the end of the Ptoon 20 Group (ca. 520-485 B.C.) would appear to be of South Italian or Sicilian workmanship and somewhat later than generally supposed. No. 184, the head in Catania, strikes me as a modest provincial work reflecting motherlandish trends (cf. however Schefold, *Griechische Plastik* [1949] 55f). So also no. 188, the Barracco head. No. 189, the head of a kouros found at Marzabotto, seems also to be South Italian, not Ionian (B. Andräe, *AA* 74 [1959] 155) or Attic (A. Arias, *RIA* 1 [1952] 242ff): compare, for example, the mouth and chin of the Berlin head from the sanctuary of Malaphoros at Selinus (*Festschrift Benndorf* pl. 6). The style of the Piombino youth seems chronologically irreconcilable with that of the bronze Apollo from Piraeus—the two are respectively nos. 181 and 159 bis of the Ptoon 20 Group. If Miss Richter's date for the Piombino bronze seems early, however, that of Langlotz and Pfeiff (cf. Pfeiff, *Apollon* [1943] 59f and n. 236) would seem to overemphasize the other extreme. The truth may turn out to lie somewhere in the middle, ca. 470-460 B.C.

An epilogue in which the final chapter in the history of the type is treated has been appended to the six main groups of the first edition, thereby bringing *Kouroi* down to 460 B.C.

The reproductions occasionally leave something to be desired, but the author can hardly be held responsible for this. The Piraeus kouros was photographed under adverse light conditions shortly after discovery, and the fact that illustrations of this most recent find could be included at all reflects credit on the responsible authorities. For the head of a kouros in the Istanbul Museum, however, the old views reproduced by Schede (1928) had to do. It is to be regretted that the kouros from Miletus, probably the most important member of

the Melos Group, could not be illustrated. Misprints are minimal. A useful innovation is that the location of each item is given under the illustration. The entire catalogue has been renumbered, and a concordance to the numbering of the first edition has been thoughtfully provided.

No one will dispute the immense importance of this work. The great quantity of new material included makes it a must even for fortunate owners of the original edition.

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HELLENISTISCHE RELIEFBECHER AUS ATTISCHEN UND BÖOTISCHEN WERKSTÄTTEN, UNTERSUCHUNGEN ZUR ZEITSTELLUNG UND BILDÜBERLIEFERUNG; by Ulrich Hausmann. Pp. 149, pls. 68. W. Kohlhammer Verlag, Stuttgart, 1959. DM 32.

"Hellenistic pottery has been neglected, and deservedly." An exception to this recent magisterial pronouncement may be found in the relief-decorated wares of the Hellenistic period, more particularly the so-called "Homeric bowls" with annotated scenes drawn chiefly from epic and tragedy. First treated seriously by Carl Robert in the 50th Program of the Berlin Winckelmannsfeste (1890), Homeric bowls were again given comprehensive treatment by F. Courby in his general study, *Les Vases grecs à relief* (1922). They have since received attention in various special studies of relief wares by Madame L. Byvanck-Quarles van Ufford, Theodor Kraus and Klaus Parlasca. The bowls have been brought to the notice of still wider scholarly circles by Kurt Weitzmann, who in numerous articles and monographs has demonstrated their great importance for our knowledge of ancient book illumination.

The volume under review comprises two rather loosely connected essays. The first is devoted to the Homeric bowls, long recognized to be of Boeotian origin; the second is concerned with the representation of the deeds of Herakles and Theseus, especially the capture of the bulls, and with particular reference to the relief bowls of Boeotia and of Attica. The treatise was presented as a *Habilitationsschrift* at the University of Würzburg; it had profited greatly from the opportunity for study which the author had enjoyed while serving for some years as an Assistant in the German Archaeological Institute in Athens.

A valuable part of the book is a new check list of the Homeric bowls. Hausmann's list, if one includes replicas of the same theme, numbers 59 pieces compared with Robert's 22 and Courby's 37. As the total number increases, the distribution of themes remains much the same. The majority (some 34) are still drawn from epic, most of the rest from tragedy. A goodly number can be connected with individual plays: one or possibly two with plays of Aeschylus, one with a play of Sophocles and no less than twelve with works

of Euripides. Despite the great posthumous popularity which Menander, on the evidence of the papyri, shared with Euripides, not a single reference to his plays has yet been recognized among the bowls. The continuing preponderance of sites in central Greece among the known find-places seems to justify the current view that most of the bowls of this class were made in Boeotia. A good example of the type (No. 29 in H.'s list) came to light, however, in Corinth in 1948, while even since the appearance of H.'s book another bowl, with the sacrifice of Iphigenia, has been found in the Piraeus (*AJA* 64 [1960] 267).

The author makes a special effort to establish the ancestry of the bowls and to fix more closely their chronological range, emphasizing quite rightly that these problems concern not only Hellenistic ceramics but also the history of Greek metalwork and of Greek book illumination. Before turning to the Homeric bowls proper, H. reviews the evidence regarding the earlier varieties of Athenian-made Megarian bowls which he considers to be earlier than the Homeric and in a loose way their forerunners. His conclusion that the earliest Athenian bowls should be dated about the middle of the 3rd century is in agreement with the abundant evidence now available from the Agora excavations; it represents a lowering by a quarter century of the date proposed on Agora evidence in 1934. As to the more debatable problems regarding the origin of the genre, the author supposes that the potters of old Greece drew their initial inspiration from fine metalwork, probably of Alexandrian and Syrian origin, and that in the ceramic development the lead was taken most probably by Athens and Corinth. The available evidence will scarcely permit a more precise statement at present.

The comparative paucity of firm evidence from excavations has permitted a very wide variety of opinion as to the dating of the sub-class of Megarian bowls, viz. the Homeric. Even within the past decade certain responsible scholars have placed their *floruit* as early as "from the end of the 4th to the end of the 3rd century B.C.", others as late as "from the middle of the 2nd to the middle of the 1st century B.C." After a careful review of the evidence, H. comes down in favor of a "medium dating" in the 2nd and 3rd quarters of the 2nd century B.C. This seems reasonable, especially in view of the discovery of a well-developed example (H.'s No. 29) in a context slightly earlier than the destruction of Corinth in 146 B.C. The best hope for more precise dating rests on more such observations in controlled excavations.

As to the inspiration behind the Homeric bowls, H. accepts the conclusion which recent research has made inevitable, viz. that the terracotta bowls were cheap copies of metal originals, the scenes on which had in turn been taken fairly directly from manuscript illuminations. On the more debatable problem of where the manuscripts were made, H. favors Alexandria.

Even if these questions be regarded as settled, the mystery remains as to why the short-lived fashion of adorning terracotta bowls with literary subjects should

have been so closely confined to Boeotia. But the mystery is no greater here than in the comparable phenomena of the Kabeiric vases and Tanagra figurines.

The second part of H.'s book had its beginning in a tiny fragment of an Athenian-made Megarian bowl showing Herakles and the bull. After a quick review of representations of the bull-taming activities of both Herakles and Theseus in classical Greek art, the author discusses in detail the treatment of the exploits of the two heroes on the relief bowls of the Hellenistic period. These two cycles of deeds, sometimes presented singly, sometimes in combination, are the most important narrative elements in the repertory of the Athenian makers of Megarian bowls; otherwise the Athenian scheme of decoration is eclectic and almost purely decorative, in striking contrast to that of the Homeric bowls. This essay comes as a useful supplement to F. Brommer's recent treatment of Herakles (1953) which breaks off with the fourth century; it will also be welcomed as an illuminating study of the essence of Hellenistic minor art.

A word, finally, about the illustrations. In keeping with current practice all are photographs, and photographs of superb quality, most of them made by Fräulein Eva-Maria Czakó of the German Archaeological Institute in Athens. Such photographs are indispensable for an appreciation of style. But a majority of readers are likely to be more interested in subject matter and composition. Such readers will complain, with justice, that the photographs should have been supplemented with drawings.

This little book will be an indispensable aid to the student of Hellenistic ceramics and toreutics and not less to those who concern themselves with the history of book illumination.

HOMER A. THOMPSON

INSTITUTE FOR ADVANCED STUDY

LA COLLECTION LUCIEN DE HIRSCH. CATALOGUE DES MONNAIES GRECQUES, by Paul Naster. Pp. 353, pls. 104 (text and plates bound separately). Bibliothèque royale de Belgique, Cabinet des Médailles, Bruxelles, 1959.

In 1899 the collection of antiquities and the library of Baron Lucien de Hirsch were given by his mother to the Bibliothèque royale de Belgique. The 1877 Greek coins which formed a major part of the de Hirsch Collection are now made available to scholars in this publication by Paul Naster, Honorary Deputy Keeper at the Royal Library and Professor at the University of Louvain.

Most of the coins are silver but there is a good representation of gold and of autonomous bronze issues. The emphasis is on strikings of Italian and Sicilian mints, nearly one-half of the entire collection falling into this category, and the quality of the individual pieces is outstanding. Of special interest are two of

the great rarities of Greek coinage: a unique tetradrachm of Aetna and one of Zankle. The Syracusean series is splendid, as is the Thracian-Macedonian section, and the Athenian sequence includes a decadadrachm and its companion didrachm.

The plates are beautifully arranged and the reproduction does justice to the excellence of the material. The catalogue is easy to use and compiled with scrupulous regard for detail. Provenances and prices, derived from de Hirsch's inventory records, are given and the full citation of earlier publication of individual coins is a helpful feature.

There are several errors in attribution. No. 1106 is Antigonus Gonatas not Antigonus I (E. T. Newell, *The Coinages of Demetrius Poliorcetes* p. 14, note 1); No. 1120 is Andriscus not Philip V (H. Gaeble, *Die antiken Münzen Nord-Griechenlands III²*, p. 197). The assignment of Nos. 1748-1756 to the period of Simon Maccabaeus is surprising in view of the hoard evidence which supports the attribution of this series to the First Revolt of the Jews. Mention is made of the later dating but the arrangement of the catalogue gives the impression that the Maccabean identification is the preferred one with reference to Reisenberg's *Ancient Jewish Coins* (1947 edition). Actually, however, only No. 1748 (year four of the Redemption of Zion) is assigned by Reisenberg to Simon Maccabaeus and even that emission is grouped with the First Revolt coinage in later works of the same author (*Ancient Hebrew Arts* [New York 1950] 89).

The bibliographical section, which has been prepared with great thoroughness, omits only a few fundamental studies. "The Archaic Owls of Athens," by C. M. Kraay (NC [1956] 43-68) drastically revises Seltman's dating as cited in connection with No. 1268. E. S. G. Robinson's "The Coins from the Ephesian Artemision Reconsidered" (JHS [1951] 156-67) establishes a later date for the beginning of the Aeginetic coinage than the one used here. No reference is made under the Chalcidian League entries to D. M. Robinson and P. A. Clement, *Excavations at Olynthus Part IX* (Baltimore 1938) but the two Brussels coins are listed and illustrated in the Olynthus publication (No. 967=R. and C. 422; No. 968=R. and C. 113c). Although not so described in the de Hirsch Catalogue, the second coin has the name of a mint magistrate, Olympichus, on the reverse below the lyre.

Finally a word of caution might be in order with regard to identifications in the Alexander series. As every numismatist knows to his sorrow, this is an exceedingly complicated coinage for which we have as yet only a comparatively small number of die studies of individual mints. From what we do have, it is clear that recurrence of a symbol or monogram cannot be used as the sole criterion for an association of issues since different cities at different periods stamped the same symbol or monogram on their Alexander-type coinage. In the de Hirsch Catalogue, No. 1068 with a term and a monogram is linked with a Macedonian issue marked with a term alone but the style of the two emissions is totally dissimilar. The de Hirsch coin

cannot possibly be related in time or place to the early Amphipolis striking of Newell's publication. Another example, No. 1059, has a trident symbol and a monogram which occurs on coins of Alexandria in Egypt, the monogram being coupled on the latter with a "Khnum" symbol. Again the two issues are disparate in style; despite the recurrence of the monogram, separate mints are involved.

MARGARET THOMPSON

THE AMERICAN NUMISMATIC SOCIETY

DEMOKRATIA, THE GODS, AND THE FREE WORLD, by James H. Oliver. Pp. viii + 192, pls. 4. The Johns Hopkins Press, Baltimore, 1960. \$5.

It is not easy to summarize briefly the contents of this volume, though it contains only 192 pages of text, of which twenty are devoted to bibliography and index. The author's purpose, as stated in his short introduction, is to examine the religious foundation underlying the mission of Greece and Rome to defend and promote freedom and the rule of law. Tracing its historical development, he gives us in six chapters: I) From Divinely Ordered Kingship to Civic Constitution; II) Some Problems of Early Republics: Ephors and Tribunes; III) Aphrodite, Democracy and the Graces; IV) The Darius Vase of the Naples Museum (2 pp. only); V) The Nike of the Free World; VI) Some later Developments in the Symbolism of Nike and the *Eleutherioi Theoi*.

The dual kingship at Sparta, in the author's view, was not derived from a Dorian institution, but "reflects something in the pre-Dorian system," typified by the position of the "*wa-na-ka*" at Mycenaean Pylos and the religious status of the Homeric *basileus*, divinely ordained, which descended to the Agiad line. The Euryponids are held to represent a subsequent creation by the aristocrats, with the support of the *damos* whose existence as landholders at Sparta is inferred from the Pylos documents. Much attention is naturally devoted to the *Rhetra*, in which the *phylai* (and *phratrai*) are explained as gentilician units, whilst the *obai* appear to be territorial divisions. *Αφίστασθαι* (following Ehrenberg) is no doubt rightly taken as "to make decisions," and the supplementary clause is not "intended to eliminate the people" (as den Boer put it), but defines what should be done in the event of a disorder, not visualized in the original form of the *Rhetra* (p. 26). The major *crux*, *γαμδαν*, etc. is subjected by Oliver to a drastic (not to say plastic) operation. After tabulating 17 different attempts at healing the passage, and suggesting *παραγοπιαν* or preferably *όμαγοπιαν* as the central element in the garbled phrase, he proposes to read at the beginning *γ(αιδ)άμω* (*όμω*)*γοπιαν* (or *παρα*)*γοπιαν* *ημην καὶ κράτος*, thus expanding the first seven letters to twelve, and identifying *γαμδαν* with the word *γαμδας* cited ("incorrectly") by Hesychius as meaning *damos*. This compound of two substantives

seems to rest rather insecurely on the epithet *γαμδοκός* quoted in its support from the Damnon inscription (*IG V. 1, 213*). Other points stressed in the discussion of early Spartan history include the early origin of the ephorate ("the eponymate of the ephor goes back to the beginning of the republic . . . in the eighth [or less likely ninth] century"), the position of Lycurgus as arbitrator rather than lawgiver, and the value of Tyrtaeus as an interpreter of the *Rhetra*.

When the author turns to Rome he interprets the early constitutional struggles with an eye still turned towards Greece, and to Sparta in particular. In support of his claim that "the rise of the five ephors to a position of control over the whole Spartan constitution early in the fifth century might have suggested, probably did suggest, a positively ideal solution to the plebeian leaders," he appropriately quotes Cicero (*De re pub. 2, 33*) for the comparison of ephors and Cretan *cosmoe* with the plebeian tribunes (p. 70). But we may well hesitate to accept that "leaders of various factions would have listened with interest to accounts concerning the problems of famous republics like Sparta, Athens, Corinth, Chalkis," and question the use of the word "imitate" in this context. For the beginning of the Consulate he accepts Hanell's view that the annual magistracy at Rome started as that of a single *praetor maximus*, but that a dual magistracy came into being before the secession of 494 B.C. In considering the source of the *imperium* he offers an attractive conjecture to make sense of the meaningless extract from M. Messala cited by Aulus Gellius (13.15.4), reading *magistratus maiores centuriatis comitiis fiunt, sed ius (magistratus) curiata datur lege*.

Athens has not figured prominently in the first two chapters, but its religious background is approached by way of a detailed study of Euripides' *Hecuba*, with the conclusion that the poet is brooding over the degeneration of Athens, whose noble *demokratia* had changed from respect for freedom and the rule of law to a state exploited by unscrupulous politicians. This leads to a discussion of *Charis* as an essential element in the ideal Athenian democracy, with an illuminating survey of the various uses of *χάρις* in the *Agamemnon* (pp. 103-05); and in turn to the claim that the new cult of Aphrodite and the Graces, set up when freedom was regained in 230 B.C. "apotheosizes the best ancient tradition of Athenian community life rather than a late repudiation of their imperialistic ambitions."

Another element in Attic worship, the cult of Nike, is treated at some length and comprehensively documented. The Nike set by the knee of Zeus on the Darius vase in Naples is not merely a symbol of the victory of Marathon, but intimately connected with the *Hellenioi Theoi* Zeus and Athena as patrons and protectors of the free world. Whilst in Hesiod Nike is an ally of Zeus, she takes on a new aspect in the sixth century, not only as an artistic type, at the hands of Archermus, but as immortalizing the victors at the Olympic and other Panhellenic festivals, at least for as long as they belonged to the aristocratic classes. But by the fifth century she has come to symbolize for

Athens the victory of Hellas over the barbarians and has lost most of her athletic connotation.

Among many interesting points in the final chapter we may note the "basic identity of *Victoria* with the Nike of Hellenic religion," with the more questionable conclusion that Rome "visualized her struggles against the Gauls, Samnites and Lucanians in terms of the Gigantomachy of Greek mythology"; that to Brutus and Cassius Nike stood for the struggle against tyranny and not military success; and that the association of Nike with Germanicus in the Gythium inscription embodies the conception of Nike as protecting the Free World against barbarian assaults. And the story is appropriately rounded off with an extract from Professor Jocelyn Toynbee's work on Roman Medallions, to show that the most important group of patrons for the Emperor was not the Capitoline Triad, but Zeus and Athena, "the ancient pair of *Eleutherioi Theoi*."

The author has certainly led us clearly, readably and persuasively along his chosen path, but readers may find a few further points of detail open to question. In criticizing Herington's dichotomy of Athena on the Acropolis into an ancient warrior goddess and the peaceful goddess of the "Old Temple," later merged into one, Oliver's assumption of a sixth-century precursor of the Parthenon, built in the time of Peisistratus as "new parts of the ritual were added with the development of republican feeling" is a fresh challenge to those who doubt the existence of such a temple. (Cf. the conclusions reached by W. H. Plummer, *JHS* 80 [1960] 140ff.) A reference to Pericles' enumeration of the Athenian resources in coined and uncoined metal (*Thucydides* 2, 13) would have shown how small a proportion was represented by the gold plating of the Nikai; and we may ask also whether they really symbolized the purpose of the Tribute rather than commemorated victories on sea (or land?). And is the bronze Victory at Brescia likely to be inscribing a casualty-list rather than a *dedicatio* on her shield? Finally, can it really be *Demokratia* who is crowning Augustus on the Vienna cameo?

The bibliography shows how successfully Oliver has steered his course among the floods of books and articles produced in the last fifteen years, in addition to earlier works bearing on his theme; but strangely he does not cite such landmarks as Jaeger's *Paideia*, e.g. for Tyrtaeus or for the *arete* of noble athletes, or Tarn's *Antigonos Gonatas*. A curious fatality has led to wrong or inverted initials given to Professors Adcock, Cormack, Kitto and Jocelyn Toynbee; Matthiae appears as Matthiae (p. 91¹) and Ziehen as Zehen (p. 130²).

ARTHUR M. WOODWARD

TUNBRIDGE WELLS, ENGLAND

HELLAS AND ROME. THE CLASSICAL WORLD IN PICTURES, by W. Zschietzschmann, translated from the German by Hedi Schnabl. Pp. lxvi (text) &

304 plates). Universe Books, New York, 1960.
\$7.50.

Hellas and Rome is basically a collection of over 500 plates intended to illustrate the essence of classical civilization and life, both Greek and Roman. In the author's own words, "Indeed an insight into the entire classical culture is provided by the world of plastic art created by the Greeks and Romans. The works of poets, statesmen, philosophers, and orators must necessarily be translated and interpreted whereas pictures provide a direct means of communication, but their greatest value lies in the fact that they not only portray an aspect of classical life but also form a part of that life and thus represent a considerable portion of its culture" (p. vii). It is the author's thesis that classical art was not merely representative of classical culture but was an integral feature of classical life, and this he illustrates profusely.

Printed in Germany, where it was published in 1959 by Verlag Ernst Wasmuth, this book is a virtual treasury of photographs that cover deities, sanctuaries and cults, the theater, classical buildings, poets and philosophers, statesmen, military life, barbarians, education, sports and games, hunting, trade and commerce, country life, carriages, houses and courtyards, domestic life, costume, music and dance, the symposium, the different ages of man, diseases, death, and the tombs. Preceding the plates themselves are useful introductory comments on these various items, followed by specific data on each plate. There is a convenient index (lxvi-lxvi) for easy subject reference.

The author believes that both Greek and Roman civilizations were actually one unified integral classical culture. This explains the mixture of Greek and Roman art. There are occasions when the reader will find this admixture annoying. It would perhaps have been better to have kept the two arts separate. There is no Minoan or Mycenaean art included and the photographs, which are black and white with a grey tone, are apparently not new ones but reproductions of old ones. The photography is rather unimaginative, though the photographs are adequate for general representation. However, the details are not always clear for those who would like to examine ancient art more closely and more accurately. There are no color reproductions nor can the generalizations in the text always be counted on to be up to date. There are some orthographical errors (pp. 29, 30 Hieron/ p. 36 Appollo/ p. 62 Flavius/ p. 84 Olympium/ p. 157 cat for marten).

Nevertheless, *Hellas and Rome* is a veritable treasure of classical art which any person interested in art or the classical world will want to know and enjoy.

JOHN E. REXINE
COLGATE UNIVERSITY

ANTIKE KUNSTWERKE, EHEMALS STAATLICHE MUSEEN
BERLIN, ANTIKEABTEILUNG, by Adolf Greifenhagen

gen. Pp. 44, pls. 100. Walter de Gruyter & Co., Berlin, 1960.

This pictorial reunion with old friends returned from the war evokes pleasure and sadness. The survivors have been gathered in from places of safekeeping in western Germany and placed on exhibition in Charlottenburg; many are none the worse for their years of internment, some suffered slight and reparable damage. Companions are known to have been utterly destroyed, others are missing.

The selection of survivors, cleaned, repaired, and photographed for publication, is representative of the collection now shown in sixteen rooms. The emphasis is upon pottery, for the bulk of material retrieved is the extraordinary collection of ancient vases which unfailingly impressed pre-war visitors to the Museum Island. Some four score objects are illustrated in one hundred handsome plates and discussed (by such categories as sculpture, bronzes, Attic black-figure vases) in a brief text which sets each piece against its art-historical background. A list of plates gives succinct factual information: dimensions, preservation, pertinent bibliography. The bibliography has been brought up to date, with some minor omissions which probably will worry only the specialist.

It is good to know that for new generations Herakles and Apollo still struggle over the tripod in Andokidean elegance, that Achilles still wraps a tidy bandage about Patroklos' arm, and that Makron's maenads still rage around Hieron's cup. We hope they never again witness more violence than stirs within the confines of their exquisite borders.

FRANCES FOLLIN JONES

THE ART MUSEUM
PRINCETON UNIVERSITY

IL LAPIDARIO GRECO E ROMANO DI BOLOGNA, by Giacomo Susini. (Le Collezioni del Museo Civico di Bologna.) Pp. xv + 195, pls. 21. Soc. Tip. Margheriani, Bologna, 1960.

This book is a model of its kind. Its purpose is twofold: to serve as a catalogue of the inscribed Greek and Roman monuments in three halls of the Civic Museum of Bologna and to constitute a comprehensive supplement to the inscriptions from the area in *CIL XI*, 1 (1888) and 2, 2 (1926). The city was a place of consequence from the time of the Villanovan settlements at the beginning of the first millennium B.C. and as the Roman Bononia it flourished as a center of the north Italian road system on the Via Aemilia. The greatest number of some hundreds of surviving epigraphic records can be dated between 50 B.C. and A.D. 150, with especial frequency occurring in the Augustan period when the town became an Imperial *colonia*.

The catalogue proper describes 192 inscriptions and

monuments in the Museum relating to Bononia. There is also a small section devoted to alien inscriptions, both Latin and Greek. Each of the monuments is fully analyzed: where pertinent, the reader receives information on architectural data, kind of stone and present condition, type of inscription, names of dedicant and dedicand, provenance and date, measurements of stone and letters, bibliography, and commentary. Texts are given in full only if they differ significantly from the edition in *CIL XI*, or if they were published after 1926, or if they have remained unedited to date. An Appendix of 23 items briefly discusses inscriptions from the region which do not appear in *CIL* and which are not displayed in the Museum. Finally, there are an Index of Names and Offices and a Concordance for relating the numbers of this volume to those of *CIL*.

The plates for the most part are clear and useful, and the general bibliography is full and up-to-date. It is disappointing, however, that none of the plates are devoted to the eight instances in which the editor has offered new readings of inscriptions which have appeared in the *Corpus*. Four of the works in the bibliography are by Susini himself, a fact which certainly makes him the ranking authority on the subject of ancient Bononia. His present book could well serve as an example to curators and scholars throughout Italy and Sicily in the preparation of other catalogues of this type.

KEVIN HERBERT

BOWDOIN COLLEGE

THE MUTE STONES SPEAK, by Paul MacKendrick. Pp. 360, figs. 171. St. Martin's Press, New York. \$7.50.

Professor MacKendrick in his book *The Mute Stones Speak* has performed a noteworthy service for all who are interested in the history and archaeology of ancient Italy, especially for those who have not been able to visit Italy in recent years to see the new excavations for themselves, and for those who do not have access to the excavation accounts in Italian journals. For such a reading public he has produced, not a handbook of Etruscan and Roman archaeology, but rather a readable and interesting account of selected excavations and discoveries against a historical framework of Italy from the Neolithic period to the triumph of Christianity in the fourth century A.D.

Since the author's main thesis is to show how archaeology illuminates history and makes vivid the lives and activities of the people of ancient times, this book will have a greater appeal for the historian, who may be more familiar with the literary source material than the archaeological, than it will have for the field archaeologist. The archaeologist might desire a more detailed account of the excavations and might feel that there were some omissions. However he would find new material interestingly described and such new

techniques as air photography, underwater exploration and the use of the periscope discussed.

The plan followed by Professor MacKendrick is to take in chronological order the main periods of Roman history, describing for each period a few excavations which are, in his opinion, significant for the interpretation of events and personalities. For example, for the reigns of the Julio-Claudian emperors, he describes the cave at Sperlonga, the ships at Lake Nemi, the subterranean basilica at the Porta Maggiore and the Golden House of Nero.

By virtue of its well written and dramatic text as well as its copious good illustrations (photographs, charts, maps and drawings of models of buildings), *The Mute Stones Speak* is a worthy addition to the growing number of archaeological books aimed at the general reader and student rather than the specialist. For too long Italy had been neglected.

RUTH ILSLEY HICKS

WILSON COLLEGE

LA PIANTA MARMOREA DI ROMA ANTICA, FORMA URBIS ROMAE, by Gianfilippo Carettoni, Antonio M. Colini, Lucos Cozza, Guglielmo Gatti. Pp. 268, tavole aggiunte A-R, atlas of pls. 64. Comune di Roma, S.P.Q.R. (Ripartizione X), 1960. Lire 40,000.

This unique enterprise, the progress of which was reported in *AJA* 61 (1957) 375, had by the end of 1960 reached its final stage, and its significance can now be appreciated.

In the year 1562, excavations in or near what is now known to have been the southeast corner of the Forum Pacis in Rome yielded a quantity of marble slabs which had fallen from their original position on the end wall of a hall which appears to have housed administrative archives. Subsequent discoveries increased the number of fragments, some of which proved to fit against one another.

It soon became apparent that these slabs presented a plan of the ancient city; internal evidence dates its execution in the years A.D. 203-211, and it clearly incorporated the results of the administrative reforms of Septimius Severus. Its remarkable accuracy is demonstrated in the portions where it can be compared with existing remains, as in the case of the two northernmost temples in the sacred area adjacent to the porticus of Pompey, where even the difference in the two types of column is suggested.

About one-tenth of the original surface of the plan has survived; one-twentieth of the surface has been assigned its place in the topography of the city. The 151 inscribed marble slabs had covered an expanse of ca. m. 18.10 in width by m. 13 in height, or ca. 235 square meters, reproducing the topography on a scale of 1 to ca. 240 or 250. The southeast, approximately, appears at the top. In the present edition, the plan is

reproduced at one-quarter size, except for the copies in Renaissance manuscripts.

After diverse vicissitudes, these precious fragments came into the patrimony of the S.P.Q.R.

The reconstruction of the plan, and its proper installation, had always constituted a serious problem, not only by reason of its dimensions; in 1903 a temporary solution was effected, in which Hülsen and Lanciani collaborated: the fragments then identified were affixed to a plan of the city outlined upon the stucco surface of a wall bordering an open space adjacent to the Palazzo dei Conservatori. In a few years, however, it became apparent that this location not only precluded detailed study but exposed the delicate surfaces to deterioration. In 1927 a new commission was appointed, charged with reaching a definitive solution; the marble fragments themselves are finally housed in the Museo di Roma at Palazzo Braschi, and the present publication will enable scholars in general to appraise the plan in its minutest details and with full confidence in the information thus supplied; the very helpful series of indices deserves great praise.

In view of the conventions followed by the ancient engravers, the guidance which the able collaborators' years of familiarity with the fragments have enabled them to offer will prove of the greatest help.

They have adhered strictly to the terms of their commission, and have produced an instrument for work—not a fully rounded out treatise on the topography of the city; scholars will still turn to the familiar volumes of Jordan-Hülsen and Platner-Ashby, also the *Fontes* assembled by Lugli and his group, for a coherent treatment of the regions, an alphabetical dictionary of the places and monuments, and a repertory of the documents.

During the years in which this undertaking was in progress, a series of articles by Gatti revealed successive stages in the recovery of the central area of the Campus Martius and the low ground between Aventine and Tiber; while the publication was still in the press but it was no longer feasible to alter its arrangement, further important joins and combinations effected by Cozza and Gatti compelled a drastic revision of opinion regarding the Circus Flaminus and the Theater of Balbus, with implications affecting the topography of a wide area between the Capitol and the Tiber (Gatti, *Capitolium*, July 1960, 3-12). This was soon followed by E. Nash's treatment of the twin minute rectangles indicated on the slab concerning the Temple of Castor and the Fountain of Juturna (*ArchCl* 11 [1959] 227-31, pl. 75).

Problems of city-planning and urban architecture are of absorbing interest at the present time; and it is no mere coincidence that the year of the official publication of the *FUR* should have witnessed also the appearance, from the University of Michigan Press, of Axel Boethius' Jerome Lectures, *The Golden House of Nero, Some Aspects of Roman Architecture*. Four of its illustrations show portions of the *FUR*, due to the generosity of its official editors. Boethius supplies the historical and cultural setting for various types of

edifice easily recognizable on the marble plan—both the Italic and the Hellenic tradition of the temple, the atrium house, the four types of insula, the "strip-house," etc. His volume will guide its readers also to the considerable recent literature in this field.

The appearance of this publication facilitates an attempt on our own part at a fresh interpretation of some unusual groundplans. The indication of non-structural features in interiors appears to have lain outside the terms of reference of the ancient surveyors: their plan exhibits no instance of a bakery such as forms a familiar feature in the plan of Pompeii appended to *CIL IV*, suppl. ii. And yet such establishments, with their smoking ovens and grating mills, would have contributed their share to the *beatae fumum et opes strepitumque Romae*. However, we are here concerned rather with a different type of groundplan, which occurs in *FUR* once in no. 101, and three or four times in no. 676: a circular or oval arrangement of columns within a rectangular enclosure. On p. 157 these are termed *peristili interni—di forma circolare, piccoli peristili circolari*: but it would be difficult to adduce parallels for such a union of what seem incompatible elements (*macella* with their *tholi* are excluded).

A more probable explanation, we believe, is due to the competence and acumen of the late Luigi Jacono, who recognized, in the Pompeian establishment Reg. VII, Ins. vii, no. 16, with its similar groundplan, an aviary: the circle of columns—in that case, of wood—once supported a canopy, and the intervals were enclosed by netting (*MAAR* 10 [1932] 10-13, pl. 1). Such structures appealed to the Romans, and there would seem to be nothing abnormal in their presence on the marble plan.

A. W. VAN BUREN

ROME

MUSEO DELLA CIVILTÀ ROMANA—CATALOGO. Casa Editrice C. Colombo, Roma, 1958.

The Museum of Roman Civilization was opened on April 21, 1955, in an expressly made building, thanks to the liberal encouragement of F.I.A.T., in the new quarter of the Esposizione in Rome.

Its first elements date from 1911, when Rodolfo Lanciani conceived the idea of "recomposing a picture of the Roman civilization under the Empire" in an exhibition which was held in the rooms of Diocletian's thermal baths. Through various events, and especially thanks to the work done by G. Q. Giglioli, in 1927 we succeeded in constituting the Roman Empire Museum and in 1937 there took place the opening of the Augustan Exhibition of Romanity. The scientific material of these institutes is now assembled and represents the very great ensemble of counter-drawings, reconstructions, and photographs of the new Museum. It was set in new order by the scientific personnel of the Department for Antiquities of Rome Municipality. The new catalogue was specially prepared by Professor C. Pietrangeli and Doctor M. Panvini Rosati Cotell.

lessa, with a preface by Professor A. M. Colini. It employs the entries of volume I of the Augustan Exhibition Catalogue, ed. 1938, so it might be considered as a new edition, modified according to the changed order of the rooms and sections, with suitable integrations, explanations and antiquary information. The parts having a temporary or propaganda character, according to the political climate, have disappeared; all the material has been arranged according to more logical, rigorous criteria, the sections have been decreased from 82 to 59, with considerable didactic and scientific advantage.

Sections V to XIV have the character of an historical frame, from the origins of Rome till the fourth century B.C.; XV is devoted to Christianity and the next to religious, military and civil institutions, to architecture, social and family habits, cultural and artistic manifestations, and the different activities of social life. Newly acquired pieces are very few: among them we have the counterdrawings of Trajan's column, granted by Pope Pius XII. Of great interest is the model of Rome during the time of Constantine, which is now up-to-date and completed by I. Gismondi; it is now hoped that the well deserving architect wishes further to make the work quite up-to-date according to the recent results reached by the editors of the Severus' *Forma Urbis*, which was just recently published in Rome.

The catalogue was a necessity and no light effort and we ought to congratulate those who drew it up. This first volume meets the requirements of a public of varying culture; Professor Colini wishes—and we join him—that the second volume be edited as soon as possible, containing the up-to-date bibliography and the indexes. In fact, the old entries lack any critical hint and only rarely have any chronological indications. The last twenty-year period has been full of progress in cognizance of the art manifestations of the Roman world. The Museum might become a first class instrument for our studies and its superintendents seem to be conscious of this fact, since they intend to complete the collection with the lately discovered monuments. If they wish to make it a productive, working center of Roman studies, they should take measures to assure that volume II of the catalogue follows methodical and scientific orientations; then they will receive the expressions of gratitude from the promoters of art and Roman civilization.

B. M. FELLETTI MAY

ROME

ROMAN CONSTRUCTION IN ITALY FROM TIBERIUS THROUGH THE FLAVIANS, by Marion Elizabeth Blake. Pp. xvii + 195, pls. 31. Carnegie Institution of Washington, Washington, 1959. \$8.25 (cloth, \$9.00).

Miss Blake's *Ancient Roman Construction in Italy from the Prehistoric Period to Augustus* already has an

honored place on the shelves of every student of Roman architecture. The present volume, though formally independent, is a continuation of that work, covering the period from A.D. 14 to A.D. 96. A third volume is promised, carrying the story through to the death of Constantine. The focus of attention throughout is the buildings of Rome itself and its immediate vicinity. The spread of Roman practices to other parts of Italy is also considered, but the provinces are excluded.

After a brief introduction, surveying the types of evidence available, the main body of the book is divided into two chapters, dealing with the Julio-Claudian and Flavian epochs respectively. Each chapter is subdivided into sections dealing successively with Rome, Ostia and the rest of Italy, and each section is further subdivided into the reigns of the individual emperors and, within each reign, into categories of monument. A short final chapter, summarizing the whole, is followed by 27 pages of analytical indices. As in the previous volume, text and notes are printed in parallel columns, an arrangement which has much to commend it in a work in which bibliographical references and factual annotation are bound to play so large a part. The whole is, indeed, a miracle of lucid, thoughtful organization and presentation; one cannot imagine a clearer, simpler exposition of the huge mass of established fact and learned conjecture which Miss Blake has undertaken to sift, analyze and record.

The positive merits of Miss Blake's work are so evident and so familiar that the reviewer may perhaps be forgiven for dwelling briefly upon some of its limitations. In the first place, as the title implies, this is not a study of Roman first-century architecture. Miss Blake's avowed purpose is quite different. She is concerned with the building contractor, not the architect. It is open to question, however, whether in fact this is a valid distinction to make when dealing with an age in which estimates of what was structurally possible were so manifestly determined by practical experiment rather than by theory. Certainly, valid or not, Miss Blake has not been able to avoid all reference to the fact that many of the structures which she describes were also buildings of high architectural quality; and here the results are at times, to say the least, disconcerting. This, it must be remembered, was the century which saw the first explicit realization and exploitation of the significance of interior space, a revolution in architectural thinking hardly less important than that which is taking place today, one, moreover, rooted in the very building practices that are the principal subject of this book. The only hint of this in the concluding summary, "General Contributions of the Century to Architecture" (pp. 164-65), is a brief reference to "an impulse towards curvilinear and mixtilinear architecture," followed by the extraordinary statement that in the Neronian-Flavian period "in general there was greater interest in the field of architectural decoration than in architecture *per se*." That Nero's tastes were ornate, nobody will deny. But that this is the real architectural significance of the Golden House or

of Domitian's work on the Palatine is surely a travesty of the facts.

It is, however, for the information that it gives us about the building practices themselves that the book can fairly claim to be judged; and here it can be stated, without reservation, that Miss Blake's knowledge of the material remains is encyclopaedic, and that she has succeeded in assembling and presenting, clearly and concisely, an enormous mass of valuable information, drawn both from her own observation and from the notes and published accounts of others. Anyone familiar with the topographical complexities involved, or the shortcomings of many of the published accounts, will realize what a remarkable feat of industry and level-headed organization this represents.

That there are questionable statements of fact is inevitable in a work of this sort, where so much is compilation. The reviewer, for example, would query a number of the marble identifications. The fact remains, however, that even on this particular subject Miss Blake's is by far the best and fullest available summary of the evidence. A more serious criticism is that one is left wondering whether Miss Blake has really succeeded in visualizing the actual processes of building, as distinct from merely analyzing and classifying the surviving material record of those processes for the edification of the working archaeologist. What, for example, was the real purpose of the brickwork facing of so much Roman concrete? Miss Blake cites (p. 14, n. 66), but does not discuss, Richmond's suggestion (*PBSR* 10 [1927] 14) that it was primarily to hold the concrete while setting, as again she cites without comment (p. 39, n. 35) Carettoni's opinion (*NotScav* [1949] 61) that the familiar "bonding courses" of *bipedales* were not bonding courses at all, but a precaution against settlement during the lengthy processes of pouring and drying out. Whether or not Richmond and Carettoni are right—and in the reviewer's opinion they are—one would at least have expected some explicit recognition of the importance of the distinction, one that is surely fundamental to the original purpose of a great many of the features which Miss Blake is engaged in recording. Instead, one can only conclude from the acceptance and perpetuation, without qualification or discussion, of the familiar terminology of "bonding courses," "relieving arches," etc., that these are questions that lie outside Miss Blake's field of vision; and since the observer can only see and record what he is looking for, one is left with the uneasy feeling that even here there are serious gaps in the record of what was, by any reckoning, the key building-material of the century.

If, however, Miss Blake has written something less than a history of Roman construction during the first century A.D., this does not diminish the value of what she has done. She has presented us with a full, authoritative, accurate and eminently practical account of the sort of remains that face the archaeologist at every turn in the study of Roman architecture, a fundamental work of reference that will not be superseded in the lifetime of any of those now called upon to use

it. This is something for which one cannot be sufficiently grateful and, in thanking her, one can only conclude by wishing her all success in the completion of the third and final volume on which she is now engaged.

J. B. WARD-PERKINS

THE BRITISH SCHOOL AT ROME

Ostia, by Raissa Calza and Ernest Nash. Pp. 136, pls. 163, 8 in color. Sansoni, Florence, 1959. 6,000 lire.

When the widow and co-worker of Ostia's greatest excavator collaborates with one of the most sensitive archaeological photographers of our time, the resulting book should be, and is, worthy of the serious attention of readers of this journal. Signora Calza, writing not for specialists but for cultured laymen, divides her subject into nine parts: history, town-plan, houses, administration, public life, daily life, religion, tombs, decline and fall.

Defects are venial. There is a tendency, with which every excavator will sympathize in his heart even while he disapproves in principle, to overrate the art, which, as Meiggs well says, is, at Ostia, not to be approached too solemnly. One might differ about details: the floor-plan of the House of Diana is hardly suited for the headquarters of a guild; the pits in the Forum are more likely for flowerpots than for awning-posts; the minuscule "Curia" would better serve (Meiggs) as the seat of Ostia's *seviri*; that the Horrea Epigathiana served solely for warehousing animal skins borders on the ludicrous; the evidence appears too slight to attribute the Piazzale delle Corporazioni temple to Annaona; Augustine in Ostia did not stay at an inn. Two criticisms will have more force for Anglo-Saxons than for Italians: there is perhaps slight overemphasis on the elements in Ostia which would appeal more to Boccaccio than to Matthew Arnold, and there is a good deal of what we usually stigmatize as "fine writing."

But virtues outweigh defects, and the fine writing helps, as too seldom in archaeology, to make the site come alive. Signora Calza makes us visualize the children scrawling their graffiti, her husband turning over every doorsill in his search for fragments of the *Fasti Ostiensis*, Visconti's convicts digging out the sanctuary of Cybele. She makes much of seeming trifles: the hairpins that prove that women used the Forum Baths; the absence of heating suggesting that the House of Amor and Psyche was used as a summer residence only. She has a vivid and sympathetic eye for detail: the funerary relief of the mother dead in childbirth, with her dead baby between her knees; the bones of pets in the cemeteries; the Vandal barges passing, loaded with the loot of Rome.

Dr. Nash's pictures are, as always, exemplary, and perfectly integrated with the text. The incidental evidence they give for details of construction is particularly valuable. In sum, the scholar who consults this

book and R. Meiggs' *Roman Ostia* (Oxford 1960) is perfectly equipped to evaluate for himself this fascinating site.

PAUL MACKENDRICK

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HERCULANEUM, AUFGENOMMEN UND BESCHREIBEN, by Eugen Kusch. Pp. 32, plan 1, pls. 80. Verlag Hans Carl, Nürnberg, 1960. DM 21,50.

This very lovely little picture book aims to acquaint readers north of the Alps with the beauties of Herculaneum and with its importance for humanistic knowledge. The text is popular, including a history of the excavations, Schiller's poem on Pompeii and Herculaneum, and detailed captions which are informative and accurate as well as a trifle sentimental. A clear plan of the excavated area follows. But it is the choice of subjects and the beautiful photography that are unusual. Everyone can find in these illustrations something to admire, and something which perhaps he has never before appreciated. This reviewer would like to single out the concluding fifteen photographs of bronzes, two statuettes and all the most splendid bronze statues with details of their heads. These beautiful pieces, an unusually great proportion of which retain their inlaid eyes, come to life on these pages. The serene classicism of the Mercury at ease and the "Berenice," the live fighter and all the portraits, the majesty of the "Dionysos" with the exquisite line work, the contrast of these with the rather vapid "dancers"—these characteristics appear as they seldom can be observed in a museum. For this reason these photographs are valuable for study as well as for enjoyment.

DOROTHY KENT HILL

THE WALTERS ART GALLERY

LOVES AND LOVERS IN ANCIENT POMPEII. A POMPEIAN EROTIC ANTHOLOGY, by Matteo Della Corte, translated by A. W. Van Buren. Pp. 135, figs. 19, pls. 6 (graffiti in facsimile). Pompei, 1960. \$3.20.

One welcomes the translation into English of these essays in the interpretation of graffiti by the dean of Pompeian epigraphers—the more heartily because it contains a chapter more than the Italian edition, in which the author discusses the recent discovery of a house he believes was occupied by a professional sibyl, a certain Biria. It deserves not only the welcome that everything that Della Corte writes receives among Pompeianists, but also wider use among students as an introduction to the art of deciphering and interpreting these casual scribblings. For the title is unfortunately misleading; though light in tone, this is an effort of scholarship and acumen, and there is nothing included that would bring a blush to the cheek.

The sprightly introduction analyzes the mania of

antiquity for expressing itself on walls, and the quality and quantity of Pompeian graffiti. The body of the text is divided into five chapters, the first three devoted to what we know of Pompeian lovers and love affairs, the fourth to the house of the Birii, the fifth to Novellia Primigenia of Nuceria, a beauty—the author suggests very likely an entertainer—who seems to have left a wake in Herculaneum as well as at Pompeii. Of these, the last two will be of special interest to the scholar, since they deal with new and important material, but he will find much to think about in the earlier portions, where many familiar inscriptions are given new and attractive interpretation. For example, in his brief note on the use of pseudonyms in these documents Della Corte offers us reason to ponder names we had earlier accepted without question, and by the brilliance of his evocation of the circumstances surrounding the writing of such as *CIL IV* 5092, 5296, 8227, and 8258-8259, makes us wonder whether it is his long experience or his gifted intuition we enjoy the more. Every page is alive with enthusiasm and imagination, and a wealth of learning has gone into the comments on such subjects as gladiators and the triumphal progress he envisions for Primigenia. As a lesson in how graffiti can be used to illuminate Pompeii and the Pompeians, it is hard to imagine anything better.

One would, on the other hand, have welcomed more comments on the provenience of the inscriptions and more on the verse (often pretentious and clumsy, but often curiously effective) in which Pompeian lovers expressed themselves. The translation is conscientious, but as the translator says, some of the peculiar charm of the original has been lost.

L. RICHARDSON, JR.

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DIE RÖMISCHEN BRONZEN AUS DEUTSCHLAND. I. SPEYER, by Heinz Menzel. Pp. vii + 59, pls. 58. Verlag des Römisch-Germanisch Zentralmuseums, Mainz, 1960.

This beautiful small volume inaugurates a project for cataloguing all figural ancient bronzes found in Germany. Every museum which depends largely upon local excavations will publish its entire collection, including pieces of unknown provenience, but institutions which depend heavily upon trade will not be included. A parallel plan began in France with two supplements of *Gallia*, one by Germaine Faider-Feytmans dealing with the bronzes of Bavai and one by E. Espérandieu and H. Rolland on Seine Maritime. The German project does not aspire, as did the Bavai volume, to collect all the objects found in the area and dispersed, but limits itself to the contents of the museum with a brief listing of items lost through fortunes of war and for other reasons. The subject is sculpture and sculptural decoration. Plain vessels are excluded, a system causing momentary confusion to the reader who

finds but two vessels, a jug with relief Dionysiac ornament on the handle and a bowl with cover having drawn designs, appearing from a large find of kitchen ware discovered at Rheinzabern in 1882, and only the Hemmoor pail out of twenty-two vessels found at Speyer in 1941. The comparative bibliography is exhaustive. The publication date of Espérandieu and Rolland, *Bronzes antiques de la Seine Maritime*, was too late to permit its inclusion, a circumstance that is especially regrettable as regards the Lar, No. 16. The descriptions and discussions are adequate and objective, as is desirable in a catalogue, and the scholarly standard is set for an excellent, useful series.

The Landesmuseum of Trier is to publish the second volume. Speyer is a happy choice for the first, since among its ninety-six items there are many which appear to advantage in the attractive format and excellent halftones. Among them are a fine Mercury, an Apollo statuette, a circular relief belonging to a set of parade armor and bearing a representation of Ganymede, a woman's bust of magnitude and striking style, and a portrait bust, variously identified but certainly an important person of the early empire. The finest sculptural creation is the centaur's head re-used in antiquity as a weight. With its flashing inlaid eyes, its open mouth with realistic teeth and its extraordinarily convincing hair and beard, it suggests the best Hellenistic work. M. does not settle the date of its creation but inclines toward those who consider it a late Hellenistic copy of an early Hellenistic original. In the case of No. 24, a conventional tall priest with toga, crown of pointed leaves, patera and incense box, M. gives the evidence pro and con associating the type with Etruscan Italy and early imperial Italy, stressing the importance of the not-quite-certain discovery of this example in the Rhein. Since he wrote, the picture has become even more clouded with the publication by D. E. L. Haynes (*RM* 1960) of the whole story of the priest and priestess figures from Nemi, which have no claim to association with the Caligula barges and no special claim to be post-Etruscan. The good and absolutely standard Isis and Horus group is not of certain provenience.

Among the utensils there are the afore-mentioned vessels from treasures and a fragmentary silver-plated plate with Dionysiac relief; some handsome wagon attachments with eagles' heads and with other ornaments, and part of a relief that plated a late Roman chest.

DOROTHY KENT HILL
THE WALTERS ART GALLERY

ÉTUDES SUR LA MAISON CARRÉE DE NIMES, by Jean Ch. Balty. (Collection Latomus, Vol. 47.) Pp. 200, pls. 27, figs. 5. Revue d'Études Latines, Bruxelles-Berchem, 1960. N.F. 35.

Six different aspects of the Maison Carrée are examined in this book. The first of the six presents the historical references, descriptions, and accounts that

deal with the Maison Carrée, giving a valuable critical bibliographical source to anyone interested in the building's history. This record starts in the middle of the 16th century, goes through the 18th century, and the dangerous period of alteration when the temple became a chapel for the Augustin order. After the Revolution it was used as a granary, then restored in 1823, consolidated and inaugurated as a museum, with later reconstructions between 1954 and 1956. The second large section, an architectural study of the temple itself, presents the plan, elevations, and details of the building, supplemented by some profile drawings and detail photographs. Also, comparison is made between Vitruvian standards and those of the Maison, showing the similarity. The third section is devoted to the Maison's surrounding complex, at the north end of which, on the main axis of the temple, is a nearly square building, M. Balty's curia. Unfortunately, this curia is only sketchily presented, for the author is preparing a separate study on curiae, in which this building will be fully treated. The fourth and fifth studies are both short, one discussing the quarries of the area of Nîmes which supplied the building stone, the second presenting the mathematical proportions involved in the building's design. The final section is a recapitulation of the history of the reading of the inscriptions that were on the epistyle and frieze of the north façade of the building, where now only the dowel holes remain as clues for the post-Roman world. These inscriptions were, first, an original dedication by Agrippa, around 20 B.C., then a rededication to Caius and Lucius Caesar in A.D. 1 or 2.

The author admits that because of economic limitations he has confined himself to the mention of reference books in footnotes, omitting a bibliography. But since there is such a wealth of material in the footnotes (sources ranging from Palladio and before to Jefferson and Stendhal), a bibliography would be much appreciated for quick references.

One question did arise in this reviewer's mind: since M. Balty makes no mention of pottery finds associated with the peribolus, and since much of the excavation was done in the early 19th century, perhaps no pottery finds are available for study. But since the peribolus and curia are still undated, is there no pottery that can help determine the building dates?

The *Études* is a useful historical and architectural record of one of the world's important buildings, especially since the building is so precisely dated and well preserved. One is extremely grateful to have the material concerning it so completely presented.

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LE QUARTIER NORD-EST DE VOLUBILIS, by Robert Etienne. (Published under the auspices of the Centre National de la Recherche scientifique, the Universités marocaines and the Mission universitaire et culturelle française au Maroc.) Pp. 190, pls. 88 (including 37 plans), pls. in separate folder. E. de Boccard, Paris, 1960.

The houses of Roman Africa, of which hundreds have been excavated, have received less attention than they deserve, and this systematic study of a residential quarter, its town-planning, its water supply and drainage system, its houses and shops, is greatly to be welcomed. Most of the quarter has been cleared and twenty-three houses were available for this survey. They are the homes of the local men of substance, they belong to a relatively short time-span, ca. A.D. 195-285, and they present an excellent picture of a typical form of North African house architecture.

They are essentially of Hellenistic ancestry, though they have certain Roman characteristics. Their façades are usually hidden behind the familiar rows of shops. A large vestibule leads directly, or by a turn round a corner, to a peristyle round which the reception rooms are grouped. This peristyle is a court (not a garden) with central basin and fountain and porticoes round it; it is definitely not an atrium, being too large and having too great a proportion of its space open to the sky. The more private rooms of the house are frequently grouped round a second, smaller court, also with basin and fountain, for which M. Etienne uses the term *atriolum*. Stairways show that some of the houses had upper storeys. There is disappointingly little evidence about the kitchen and other domestic offices, doubtless due to the fact that so much of the cooking was done on portable stoves or braziers. Ten of the houses had olive-presses of distinctive type, which had had wooden uprights to hold the pressing-beams; in seven houses there were bakeries with mills.

The meticulous examination of the water supply, which is one of the most interesting chapters of the book, provides a great deal of information about the aqueducts and such things as diversionary points, the way in which the conduits were carried across drains, lead pipes, taps and other fixtures. It reveals the fact that even in the high-class houses of this quarter the pipes led only to the fountains in the courts and the drains simply carried off the surplus water from the fountains, only exceptionally being diverted to connect with latrines. There were, however, openings in the drains covered with circular slabs of stone pierced with a pattern of holes, down which presumably the sink water and household slops were emptied.

The pre-existing aqueduct, which is carried above ground on a wall in the south part of the quarter, affected the street plan, which was also determined by the existence of a large building in the centre of the quarter. This house was rebuilt in the time of Gordian III and is generally believed to be the procuratorial palace. It would have helped the reader if it had been shown, at least in outline, in the admirable general plan. M. Etienne accepts Carcopino's view that this is the site of a palace of King Juba II (*Le Maroc antique 188-89*). A large house was found under the third

century palace by M. Thouvenot who, however, dates it to the second century, and believes that if there was a palace of Juba in Volubilis it should be sought near the forum ("Le Palais dit de Gordien," *Publ. du Service des Antiquités du Maroc*, Fasc. 12 [1958] 10-41). The town-planners showed considerable adaptability in allowing for these earlier structures, and for the slope of the hill. A contoured plan is being prepared but unfortunately has not yet been published. Similarly, full publication of the town walls is also in preparation and should shed further light on the history of the site. According to M. Etienne, careful examination of the pottery in several trenches has shown that (apart from the palace) "rien n'a été construit dans ce quartier avant l'extrême fin du II^e siècle." I find this a bit puzzling if the walls are to be ascribed to Marcus Aurelius (Thouvenot, *Volubilis* [1949] 34-35). If they were deliberately designed to enclose the newly-planned quarter, the long delay in building the houses needs explanation.

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BIBLIOGRAFÍA BASICA DE ARQUEOLOGÍA AMERICANA, edited by José Alcina Franch. Pp. 124. Publicaciones del Seminario de Antropología Americana, Vol. 1. Seville, 1960.

The Seminario de Antropología Americana, under the Facultad de Filosofía y Letras of the Universidad de Sevilla, begins its second year with the publication of the first volume of a new series. At least one volume is planned to be issued each year, and the publications are offered for exchange.

Volume 1 is hectographed and contains 124 pages, including an 8 page author index. There are 1232 titles, with 1959 the most recent date. The first section deals with the "Paleolítico" and covers the entire New World. The remainder of the bibliography is organized by geographical sections and subdivisions. There are 6 subdivisions for North America, 8 for Mesoamerica, 4 for Central America, 2 for the Caribbean, 2 for Brazil, 3 for the Andean Area and none for southern South America.

The bibliography must be appraised in terms of its goals. It is designed principally for students. Alcina, in his brief introduction, points out that any attempt at completeness would result in a much longer listing. To keep down the size, emphasis has been placed on more recent works, which contain generally accepted conclusions, and whose more detailed bibliographies supplement the basic list. Important early works are, however, included.

From the point of view of adequacy as a tool for students or for someone starting out in one of the areas, the bibliography is uneven. In general, it is better in areas where the least professional work has been done. For Ecuador, Colombia, and Brazil for example, the 50-60 references for each of these countries include

most of the important or useful works. There are 108 titles for Peru, Mexico (190 titles) and the Maya (102 titles) are given the most space. By contrast, the southwestern United States, which has been intensively studied for several decades, is represented by only 53 titles, and the eastern United States (including the whole area from the plains to the Atlantic and from Canada to the Gulf of Mexico) is represented by only 88 titles. The variation in coverage by area must be recognized as a reflection of the editor's interests rather than of the quantity or quality of the archaeological work that has been done.

Students and non-New World specialists should find this bibliography useful, particularly as an introduction to the Latin American portion of New World pre-history.

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ARCHIVES OF ARCHAEOLOGY, edited by David A. Baerlein and others. Nos. 1-11. The Society for American Archaeology and the University of Wisconsin Press, 1959-1960.

Scholars are becoming increasingly aware of the serious handicaps that are imposed on research and on the dissemination of its results by the bottleneck of publication. Costs mount continuously and most editors are forced to refuse meritorious manuscripts or postpone their printing for months and often years. Authors seldom dare to include as complete documentation of their work as they wish—tables, drawings, photographs, plans, all must be held to strict limits lest the length and elaborateness of the manuscript prove fatal to its chances for publication. One partial solution to this predicament, the private circulation of typed reports, pictures, and notes, is even at best inadequate and expensive; ironically, it forces on the scholar the very difficulties that the invention of printing with movable type was expected to alleviate. At the present time, the need is for a means of reproduction so inexpensive that manuscripts of any length can be quickly made available without the necessity of large sales to repay the costs of publication. The success during the past year and a half of *Archives of Archaeology* demonstrates that microcards are the long-sought method of reproduction.

Microcard publication requires a machine for reading, of course, since each typed page of the manuscript is reduced to about one quarter by one half of an inch. But most libraries now have at least one of the three types of reader available, and operation is extremely simple and convenient. The cards, approximately 3 by 5 inches, each bear a heading easily read with the naked eye that indicates author, title, and the pages that occur on that card. Each card carries about 90 pages of the text, illustrations, or other material. Microcards are positive photographic prints, and there-

fore reproduce directly from the original, with faithful detail, anything that can be photographed. No typesetting or engravings are involved. In the long run the advantage of low cost of publication will probably be equalled, at least in the judgment of librarians, by the savings in space that result. In the present series eleven titles have been issued thus far, reproducing 2418 pages of manuscript, yet they occupy less than one inch of a 3 by 5 file drawer. Offset or letterpress publication would have resulted in a series of 11 volumes that would have filled a foot or more of shelf space.

Archives of Archaeology has been planned for the publishing of primary documentation of investigations in or related to the New World. It does not compete with publication in other forms, but supplements it. I doubt that any of these eleven titles would be available now or in the foreseeable future if dependent on more costly means of publication, yet each puts into the hands of scholars material of great importance in a variety of fields. Numbers 1, 2, and 8 ("A Report on a Bluff Shelter in Northeastern Oklahoma," by D. A. Baerreis and J. E. Freeman; "An Archaeological Report on a Cave Deposit in Northeastern Oklahoma," by J. E. Freeman; and "Site D1-29, a Rockshelter in Northeastern Oklahoma," by J. E. Freeman) are comprehensive monographs on hitherto unreported excavations by the Works Progress Administration between 1937 and 1940, part of an immense program carried out in many parts of the country and still only partially reported. These three studies contain interesting conclusions on the changing aboriginal economic activities that are revealed by a comparison of artifact inventories. Numbers 9 and 11 also report on Oklahoma ("Salvage Archaeology in Oklahoma," Volumes I and II, by J. B. Shaeffer) and comprise thirteen detailed reports, mostly on sites destroyed by road building, and one report appraising the Archaic of the Southern Plains in the light of new data suggesting Cochise affiliations. Other numbers in the series report on widely scattered locations—e. late 18th century fortified Indian village in Nebraska ("Nánza, the Ponca Fort," by W. R. Wood, No. 3), excavation of several sites in a hitherto neglected part of Alaska ("Archaeological Investigations of . . . the Katmai National Monument, Alaska," by W. A. Davis, No. 4), the Verde Valley and surrounding parts of Arizona ("The Hohokam, Sinagua, and the Hakataya," by A. H. Schroeder, No. 5), and the California Coastal islands ("An Anthropomorphic and Morphological Analysis of a Prehistoric Skeletal Population from Santa Cruz Island, California," by T. W. McKern, No. 10).

Other potentialities of this (or of any similar) series are illustrated by two other titles in *Archives of Archaeology*. "Documentation for some Late Mogollon Sites in . . . Eastern Arizona," by P. S. Martin and others (No. 6) provides nearly 200 pages of detailed tabular and descriptive material that could not, for reasons of cost, have been included in the letterpress report on these sites dug by the Chicago Natural History Museum in 1959. Although relatively few specialists will need these details, in comparison to the many persons

who will be interested in the general report, these specialists will have at hand the necessary data for comparative purposes or for re-analyzing and checking the conclusions reached in the main report. Microcard "supplements" to archaeological publications can provide a workable and convenient solution to the problem of how fully to publish the detailed documentation that relatively few readers will need; the letterpress volume is shortened and simplified with no loss of data for the specialist. Number 7 in the series, "Japanese Source Materials on the Archaeology of the Kurile Islands," edited by C. S. Chard, consists of translations from Japanese reports (unreadable for most Americans and unavailable in most libraries) on a region which has long been looked to for possible connections with the American Arctic, connections that Chard has shown must have been slight and much too late to be involved in Eskimo origins. It can be hoped that this publication will stimulate others like it, both translations and republications of sources that have been inaccessible to interested scholars, because these can make as significant a contribution to archaeological progress as can "new" data.

Archives of Archaeology is still a new venture, and both its content and its method of presentation may be modified on the basis of experience and of response from archaeologists. But there can be no doubt of its great promise. There are, of course, disadvantages in microcard publication, such as the cost of the readers now on the market (nearly \$300 each). But hand readers are also available, suitable for brief or intermittent reference use but not for continued study, at prices as low as \$15.00 (for additional details see D. A. Baerreis and J. J. Solon, *American Antiquity*, Vol. 25, No. 4 [1960] 623-25). And in a pinch any six- to ten-power hand lens will serve to recheck a few pages, find a reference, or scan a drawing. Many people have a deep-seated antipathy to any mechanical device that comes between them and the printed page, and there is no prospect of microcards ever superseding the shelf of constantly used volumes within reach of one's favorite chair. But microcards seem to be a substantial improvement over microfilm in convenience and usability; they are easily stored and retrieved; they are suitable for numerous brief publications, each on its own card; and the user can shift from preface to conclusions, or from text to illustrations and references, as in a conventional volume—even though to the naked eye the page is unreadable it can easily be identified as a table, a photograph, a map, or a bibliographical list. The quality of photographic reproduction is of great importance in this type of publication, and it was noted in several titles in this series that some of the photographs were very dark, perhaps because the originals were dense or of poor contrast; also, overcrowded lettering on maps and charts is an even more serious fault for microcard publication than for conventional line cuts. These are faults of authors or editors, however, and can easily be corrected. In general the material is as readable as in the average letterpress volume.

Not the least of the great advantages of microcard publication is its low cost. Editions of as few as fifteen or twenty copies can pay for themselves when sold at prices well below those of letterpress and offset publications. The prices of the eleven numbers in the series under review total \$15.90; there are 39 cards on which nearly 2500 pages of material are reproduced. Rapid publication is also assured, only two months being needed between acceptance of a manuscript, typed ready for publication, and the distribution of copies. One promising development, feasible but not yet on the market, is a copier with which original-size copies can be made of selected pages for individual use, thus eliminating the need for detailed notes or constant reference to pages of special interest to a user.

There is no likelihood, or intention, that microcard publication will encroach on or compete with other, longer established methods. But this series shows what a valuable supplement it can be, particularly in permitting publication *in extenso* of things that editors have been forced in recent years to keep to a minimum—details of provenience, architectural and specimen measurements, tables, charts, photographs and drawings. The publishers and editors of *Archives of Archaeology* are to be congratulated on this successful series, and it is to be hoped that it will be imitated with series for other areas of scholarship and research.

RICHARD B. WOODBURY

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THE STONY BROOK SITE AND ITS RELATION TO ARCHAIC AND TRANSITIONAL CULTURES OF LONG ISLAND, by William A. Ritchie. New York State Museum and Science Service, Bulletin 372. Pp. 169, plates 53, figs. 7, tables 2. The University of the State of New York, State Education Department, Albany, 1959.

This study is based on fieldwork undertaken in an attempt to solve problems surrounding archaeological remains comprising the Orient focus. Prior to this field research it had not been possible to identify any dwelling site as that of people who made Orient pit burials. Subsidiary problems related to possible connection between Orient burial customs and analogous customs of the Northeast which have been interpreted as evidence of a widespread mortuary cult. Furthermore, the age of the Orient focus had only been estimated.

The study is unusual in many ways. The Stony Brook site had not been disturbed before these excavations were undertaken. In this it was almost unique. Investigations were made possible not only through the ready cooperation of the Stony Brook Shores Corporation, owners of the land, but also by a research grant made to the Board of Regents by Ward Melville of Stony Brook. A second grant from him supported radiocarbon analyses of charcoal from the site, and aided publication. A subsidy from the Long Island Chapter of the New York State Archeological Associa-

tion supported radiocarbon analysis of charcoal from one of the Orient sites.

The Orient focus was made known in the 30's and 40's by enthusiastic but ill-trained diggers who scooped out the contents of four large hilltop pits containing fragments of vessels of stone or pottery, chipped points, adzes, gouges, plummets, and other implements. Working with more eagerness than skill, these people destroyed valuable information about the placement of articles, the position and condition of charcoal, and skeletal remains. Ritchie's skillful operations in 1953 and 1956 enabled him to salvage evidence from two looted sites. From his discoveries of purposely-broken stone vessels, implements, charcoal, and bits of burned bone, in some cases associated with red ochre, he was able to interpret finds made twenty years earlier and to formulate a tentative reconstruction of burial ceremonies. Radiocarbon dates on charcoal excavated by Ritchie, and on a sample from the Orient No. 2 site found by Roy Latham in 1935, place the Orient focus and Stony Brook site between approximately 1043 and 763 B.C.

The Stony Brook site lay some twenty-eight miles west of the nearest Orient burial pit. Discovery of "fishtail" points and other forms of artifacts known from Orient graves led Ritchie to conclude that Orient people had lived at Stony Brook. Since a second and earlier midden lay beneath that in which Orient artifacts were found he concluded that the site had previously been occupied by others. These he assigns to "the Laurentian tradition," an ill-defined archaeological aggregate found in New York State and adjacent areas. In the Stony Brook site the author has come upon a shell heap midden with complicated deep pits. Such pits have been reported from sites in coastal southern New England. Dissection of the midden revealed involved complexities of its internal structure. These complexities are by no means ameliorated by the overwhelming language in which they are described.

A brief account of a site at Wading River is included. Field research there was not very productive because the site had been severely damaged and the collection was too small for conclusive statistical analysis.

The professional archaeologist will find much food for thought in this report. It is not likely to attract any but the most determined amateur, and this is a shame because an interesting story is there to be told.

DOUGLAS S. BYERS

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ANDOVER, MASSACHUSETTS

CULTURAL SEQUENCES AT THE DALLES, OREGON, by L. S. Cressman. Pp. 108, figs. 61, maps 8. Transactions of the American Philosophical Society, Vol. 50, Pt. 10. Philadelphia, 1960. \$3.00.

Cressman, in collaboration with four of his students, describes and analyzes the extensive archaeological

collections from two sites on the lower Columbia River which show continuous occupation from the end of the Pleistocene to historic times. Sections on the environmental setting are followed by descriptions of the sites, methods of excavation, geological stratigraphy, pertinent ethnohistorical data, and artifactual remains. Concluding sections organize the archaeological remains into stages, present culture-historical meanings for the previously described data, and provide some stimulating speculations. Appendices give frequency and identification of faunal remains. Numerous maps, photographs, drawings, and frequency tables graphically document the written descriptions.

The sites, WS-1 and WS-4, are located respectively at the west and east ends of Fivemile Rapids, an extremely important fishing area for historic Indian groups and, as the author has now aptly demonstrated, for their predecessors. The main excavation was at the "roadcut" section of WS-4, which formed the main stratigraphic frame of reference to which levels in unconnected test pits and at WS-1 were fitted chronologically by plotting frequency distribution curves of the combined frequency of points, blades, end scrapers, and peripherally flaked cobbles in each level. Like the author, I consider this method less than foolproof. The underlying assumption is, apparently, that the total frequency of these particular artifacts is in a stable ratio to the total frequency of all other artifacts, and when the ratios from different levels of different areas of the site are similar and vary similarly from level to level, it indicates concordance in time. However, a rough fit was achieved by this method.

Artifact descriptions are complete and most types are illustrated. Possible points of contention are the unequivocal identification of certain girdled stones as bolas, and the identification of certain antler implements as skin softeners and polishers even though they closely approximate the splitting wedges used historically. The description and discussion of the antler industry of the Early period is particularly good, although there are relationships closer than with Firth River cultures in Alaska. Indeed, the Marpole phase (first millennium B.C.) in nearby Washington and British Columbia shows a high development in this industry, although there has been no comparable analysis of detrital remains and inferred techniques. This work now stands as a basis for such an analysis. The projectile point typology clearly reflects the early and continued use of leaf-shaped points and the late appearance of triangular points. A note on the temporal range of the sub-types of leaf-shaped points would, however, have been of interest to the Northwest specialist who is ever in search of minutiae for differentiating periods. Mention in the caption or in the text of the provenience of the ethnographic (I assume) specimens illustrated in fig. 59 would have been of interest to the reader. These points are minor, however, and do not detract from the great value of this monograph.

The geological strata and artifact assemblages from the sites are integrated into a framework of three main cultural stages and periods designated as Early, Transi-

tional, and Late. Early and Late are further subdivided into three substages each. Early is characterized by a rich bone and antler industry including in part, harpoons, atlatl spurs, and distinctive manufacturing techniques. Transitional has few diagnostic artifacts and marks the decline and disappearance of numerous traits characteristic of the Early. Late is characterized by increased use of the sites, and the appearance during various sub-periods of the great variety of projectile point types, carved stone and bone, pipes, ornaments, and finally European trade goods. Date estimates are supported by radiocarbon dates, the earliest of which is 7829 ± 220 B.C. (Y-340). Americanists will be surprised at the beginning date of the Late period, some 6,000 years ago.

The final sections set forth clearly the meaning of the cultural and geological manifestations described in the preceding sections. Evidences of late Pleistocene occupation of the area are discussed and we see the panorama of cultural and ecological change as the glaciers retreat and the Columbia loses its load of ice, as the salmon begin their annual migrations up the river and economic conditions become stabilized, as hunting gives way to fishing and populations gradually settle and reap the abundant harvest, and still later new populations arrive from the Great Basin desiccated during the Altithermal. Cressman points out that the subsistence pattern established early at this site is essentially like the coastal pattern, differing qualitatively rather than quantitatively from that actually on the coast. The facts on which this inference is based are new and in this lies one of the major contributions of this work. Provocative speculations going somewhat beyond the archaeological evidence center around sources of population for the Pacific Northwest and emphasize particularly northward movements from the Great Basin. Archaeological evidence is cited for the greater antiquity, in either the northern Great Basin or on the Columbia, of Catlow twined basketry with false embroidery, atlatls with separable spurs, bolas, antler pounders and cylinders, leaf-shaped points, and other traits all of which have a lesser known antiquity to the north. The postulated (but unproved) linguistic connections between Penutian, a linguistic super-family primarily of the northern Great Basin and California, and Tsimshian, a language of central British Columbia, lead the author to speculate further and to suggest northward movements of Penutian speakers at an early time level along the eastern side of the Columbia. There is in my opinion a slight overemphasis here on the difficulties of crossing the overflowing, ice-filled Columbia, particularly since the author has already given evidence for human occupation on the other side of the river prior to the end of the Pleistocene. The entire presentation is nevertheless interesting and illuminating.

I have few specific criticisms of this study. One point I would like to make is that the discussion of the absence of bones and of bone and antler artifacts in the fill after the beginning of the Transitional centers around possible cultural and ecological factors, but

does not mention factors of preservation as possible contributory causes. The question itself is of importance as it is precisely the bone and antler industries of the Early period at Fivemile Rapids, with its incipient coastal pattern, which show resemblances to later cultures of the first millennium B.C. which not only have a coastal pattern, but are also on the coast. In the latter, bone and antler artifacts are fortuitously preserved in shell middens. At Fivemile Rapids the bone and antler were found underneath a layer of opalite-cemented hardpan, a possible preserving factor. No bones (except historic) were found above this, not even fish bones, although fishing certainly continued. The absence of bone and antler artifacts after the beginning of the Transitional at Fivemile Rapids leaves a 4,500

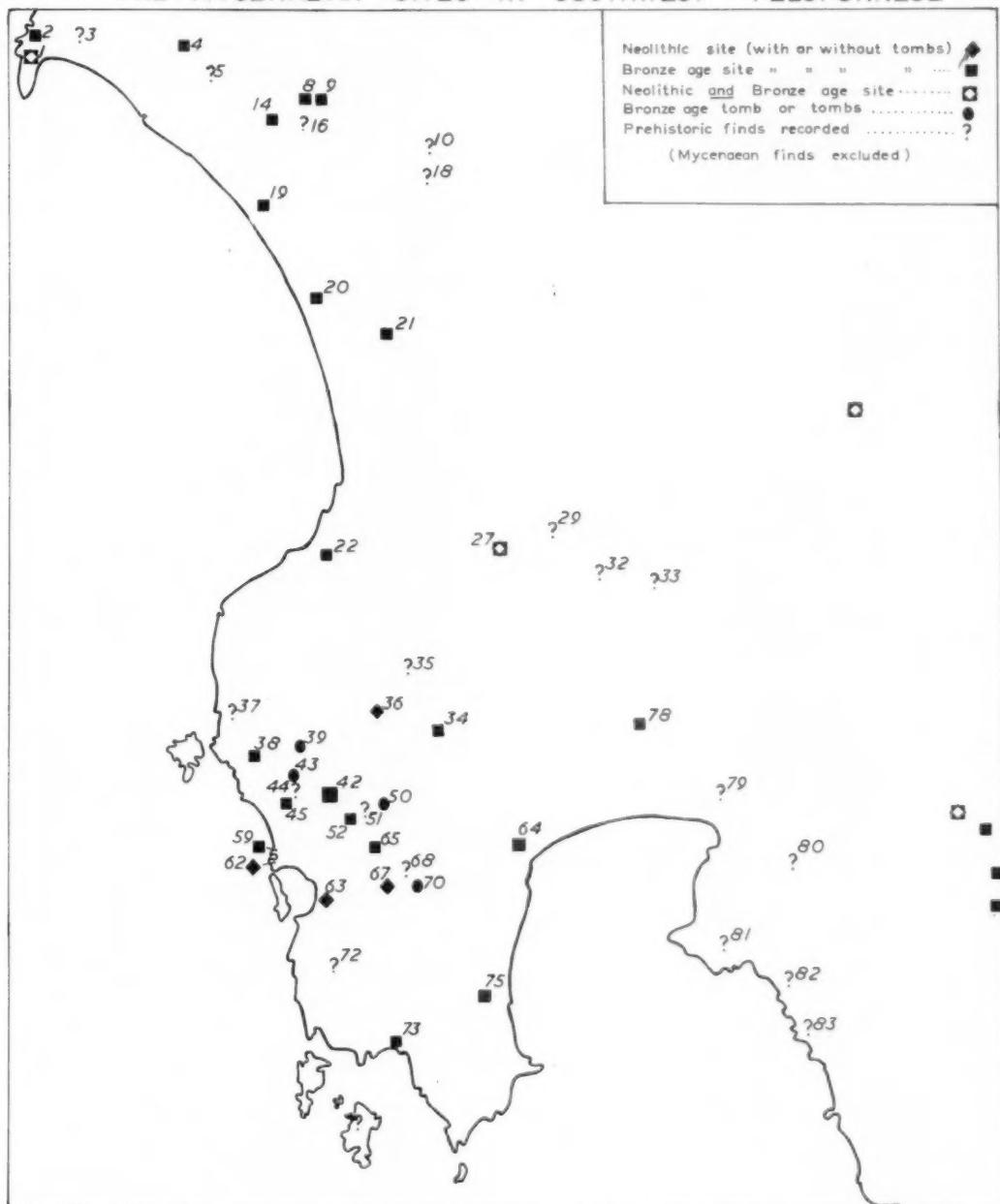
year gap in their temporal distribution for the Northwest as a whole; this gap can be partly reconciled if factors of differential preservation are brought into account.

In summary, this is a solid and significant contribution to the culture history of the Pacific Northwest and to the study of post-Pleistocene ecological adaptations in North America. The factual content, which is largely from previously unknown time periods in the Northwest, is well integrated into a meaningful picture of cultural and ecological development.

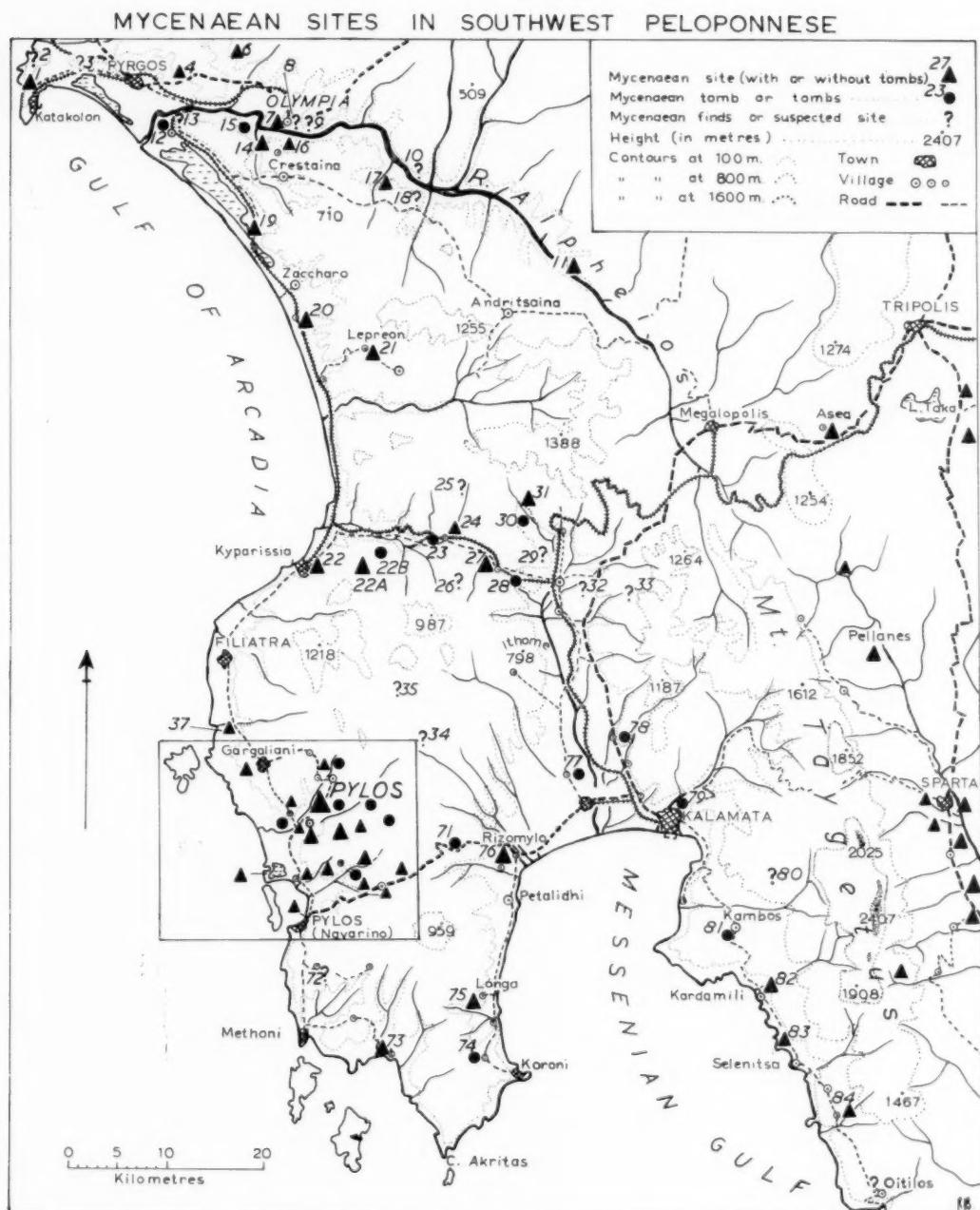
ROY L. CARLSON

ARIZONA STATE MUSEUM
UNIVERSITY OF ARIZONA

PRE-MYCENAEAN SITES IN SOUTHWEST PELOPONNESE

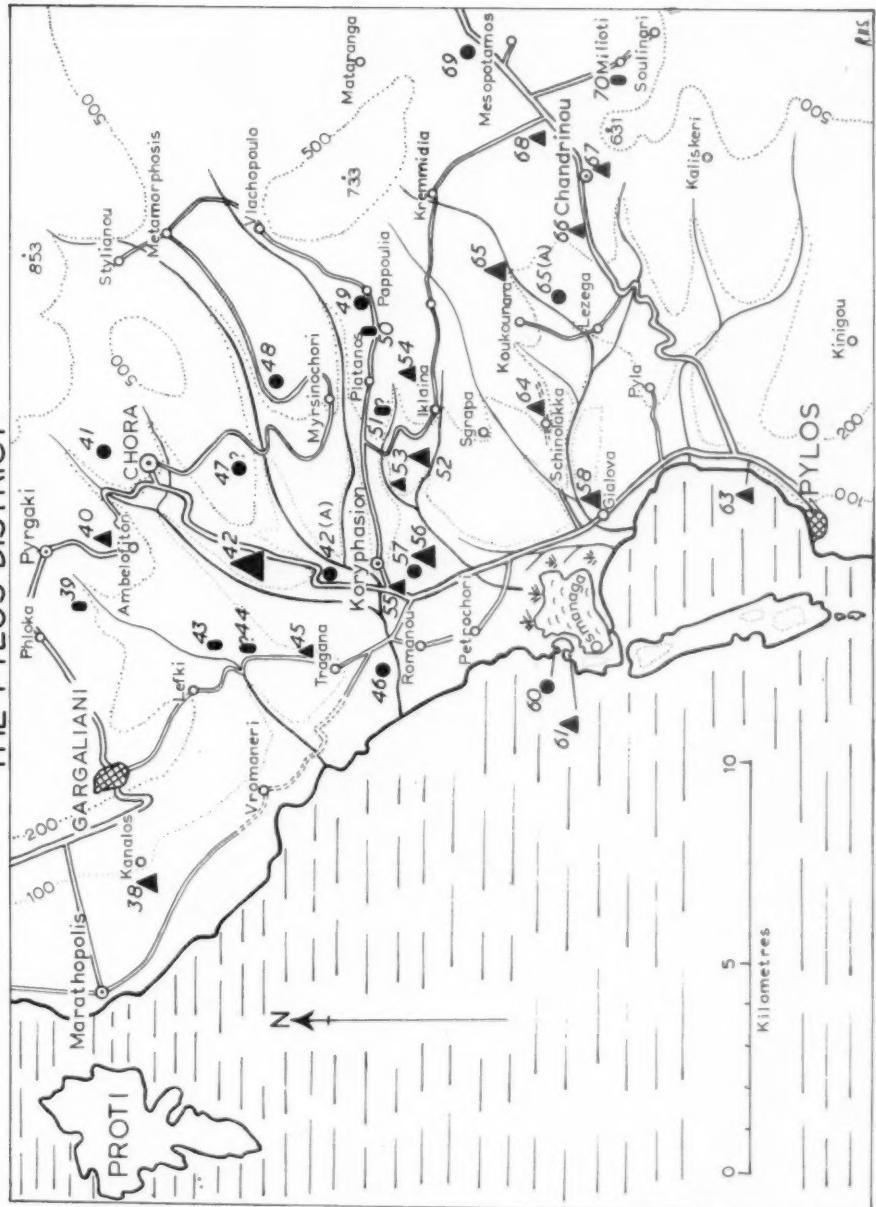


Pre-Mycenaean sites in southwest Peloponnese



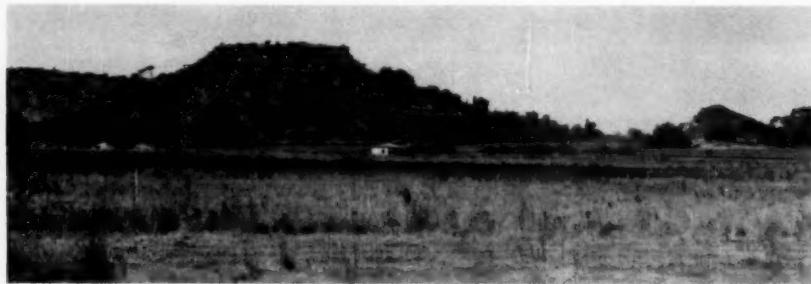
Mycenaean sites in southwest Peloponnese

THE PYLOS DISTRICT



Mycenaean site
 Mycenaean tomb or tombs
 Prehistoric burial mound or mounds
 Modern town
 Modern village
 Heights in metres
 River or ravine
 Motor road = = =
 ...500... etc.
 The Pylos district

PLATE 76 MC DONALD AND HOPE SIMPSON



a. Ayios Andreas (#1) from east



b. Klidhi (#19) from east



c. Ayios Demetrios (#21) from northwest



d. Kyparissia (#22) from west-southwest



a. Ayia Analipsis (#73) from west



b. Kaphirio (#75) from northwest



c. Nichoria (#76) from southeast



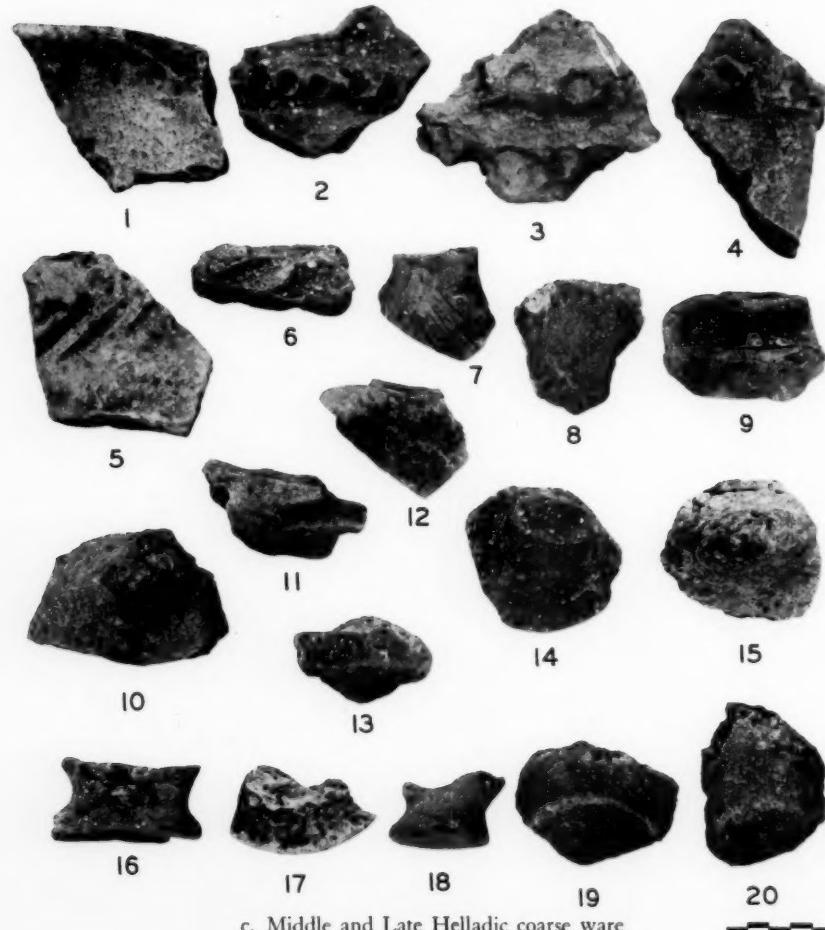
d. Entrance to tholos, Ellinika (#78)



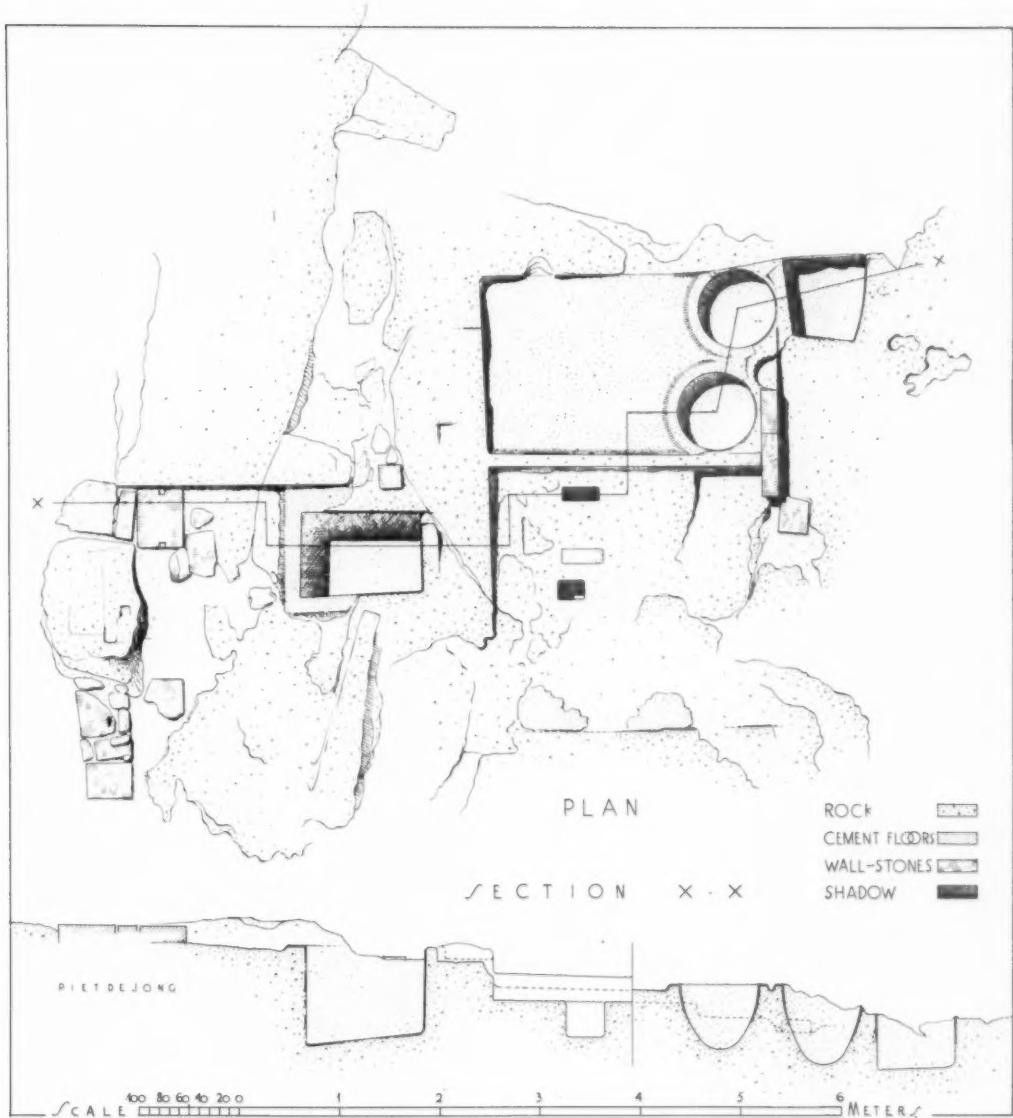
a. Mound 3, Kaldamou (#43) from west



b. Koukouyera tholos (#47) from northwest



c. Middle and Late Helladic coarse ware



A dye-works

PLATE 80 KARDARA



FIG. 1. Another dye-works at Rachi



FIG. 2. Dye-works at Debir



Figs. 3-5. Coins of Kypsela



FIG. 6. The Orestada Vessel

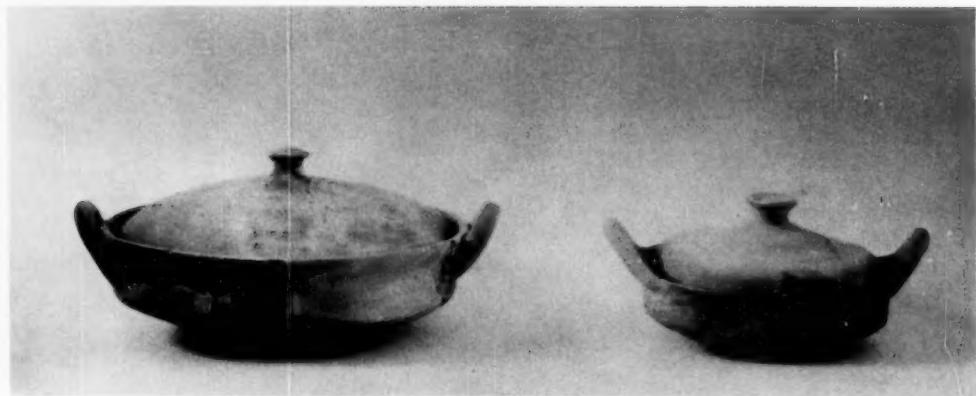


FIG. 7. Narrow-necked jug



FIG. 8. Vessel for extraction?

PLATE 82 KARDARA



Figs. 9-10. Ancient capsae?



Figs. 11-13. Deep cooking pots

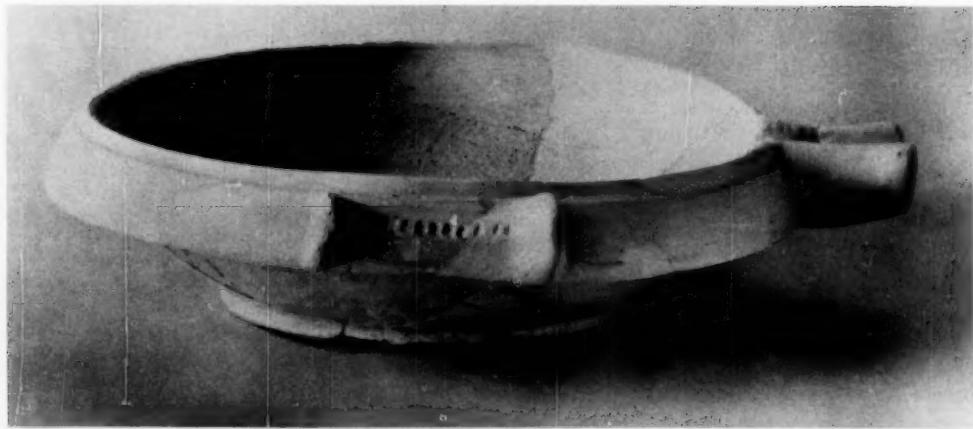


FIG. 14. Bowl with spout



FIG. 1. Map showing relation of
Cape Gelidonya to Cyprus



FIG. 3. Triangulating on the seabed



FIG. 2. The *Lufti Gelil* anchored directly over the wreck



FIG. 5. Raising a lump of
cargo with a cable



FIG. 4. Cutting a cargo-filled
lump from the concretion



FIG. 6. Raising a lump of
cargo with a balloon



FIG. 7. Ingots from area G being cleaned on beach



FIG. 9. Photographing a diver at work



FIG. 11. Plank fragments, showing dowel holes

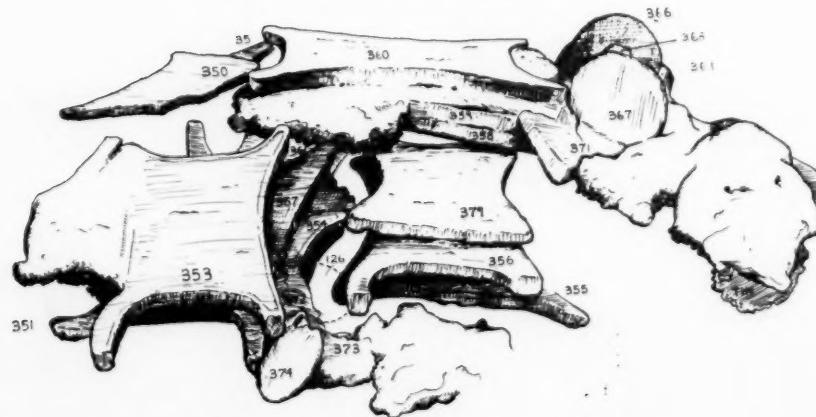


FIG. 8. Ingots from area P, from south. Drawn by Eric Ryan

CAPE CELIDONYA WRECK

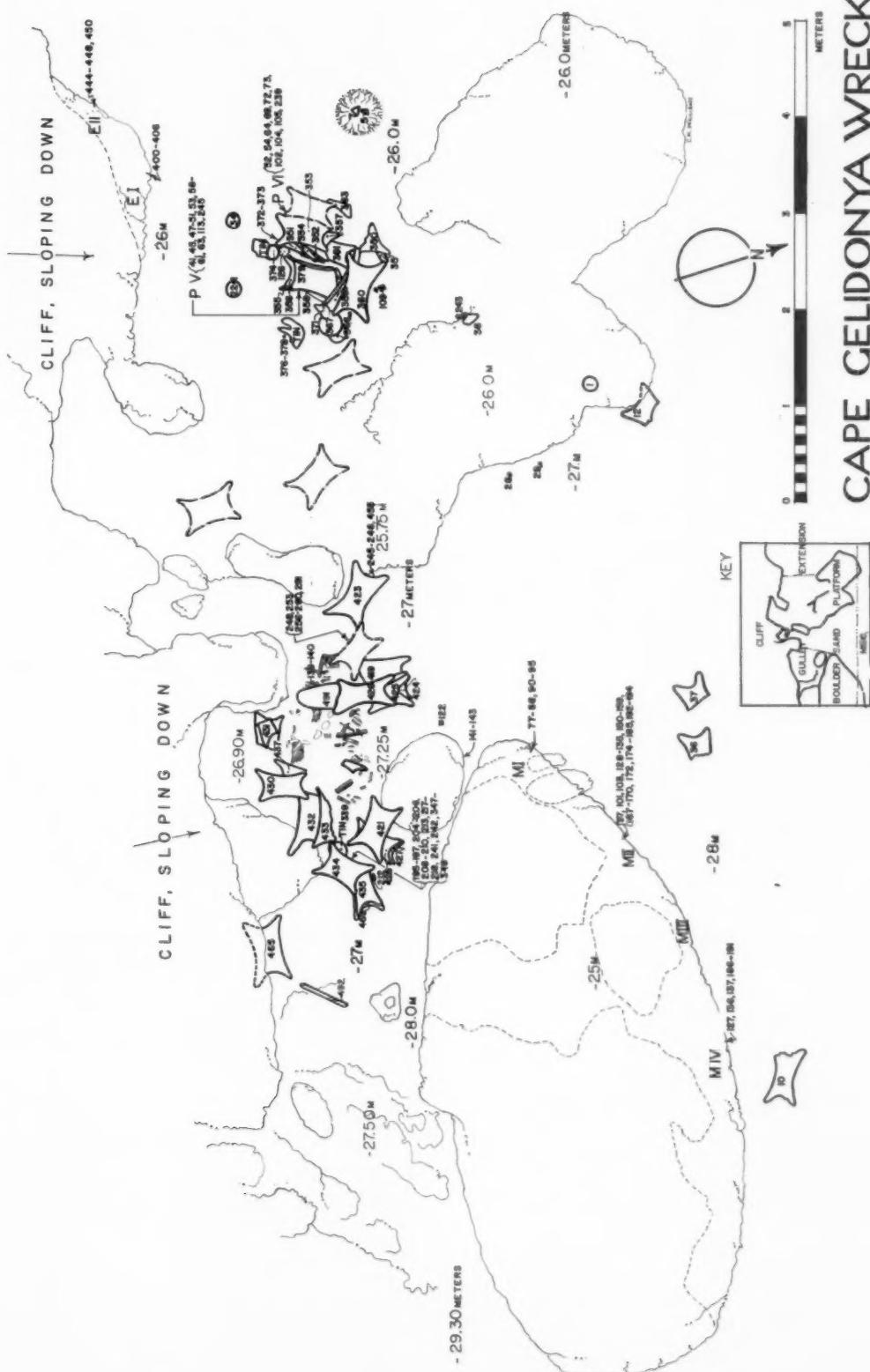


FIG. 10. Plan of wreck

PLATE 86 BASS

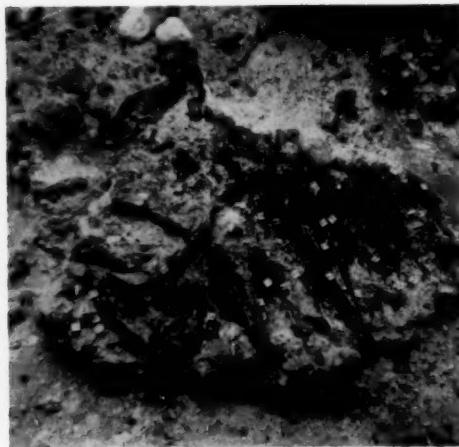


FIG. 12. Wood in area G, from north



FIG. 14. Diver drawing remains of hull on sheet of plastic

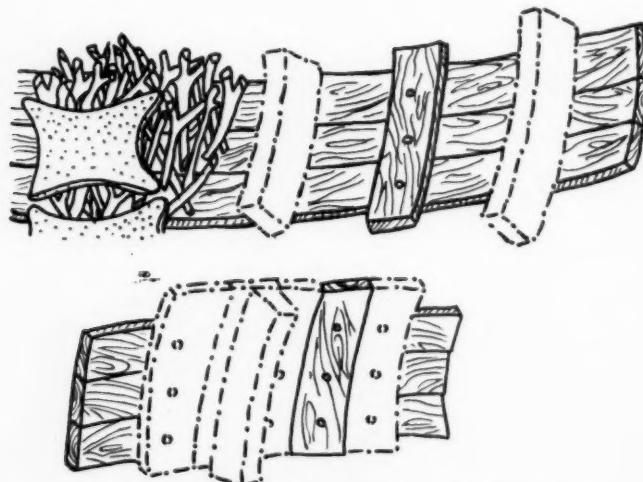


FIG. 13. Possible restorations of wood in fig. 12

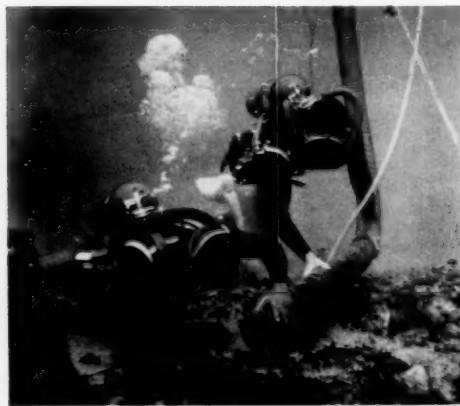


FIG. 15. Clearing sand with air lift



FIG. 16. Raising ingots of area P, from NW

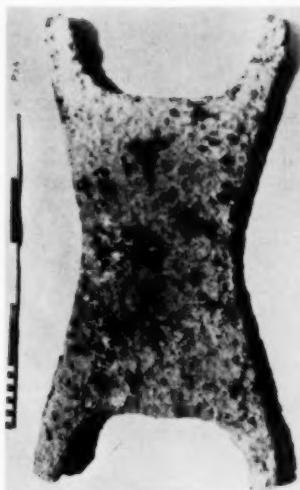


FIG. 17. Ingot of type IIa



FIG. 18. Ingot of type IIb

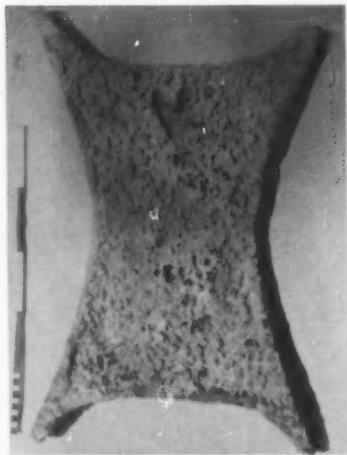


FIG. 19. Ingot of type IIc

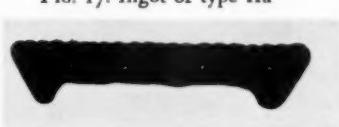


FIG. 20. Section showing
draft of ingot

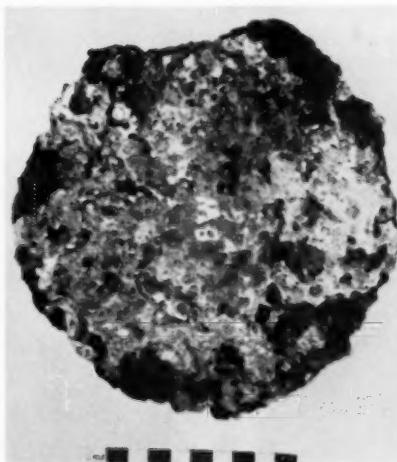


FIG. 21. Bun ingot



FIG. 22. Slab ingot



FIG. 23. Stone tripod mortar

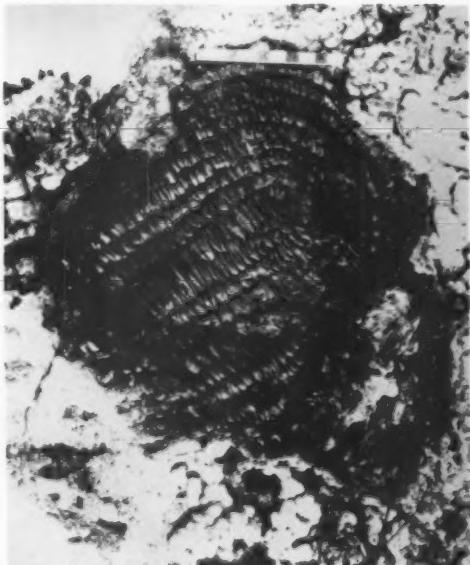


FIG. 24. Basket bottom from area P

PLATE 88 BASS



FIG. 24. Bronze double-axe

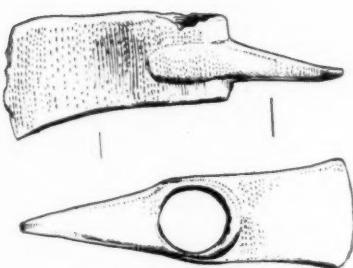


FIG. 26. Bronze axe-adze

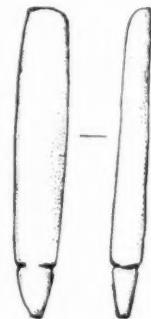


FIG. 33. Whetstone

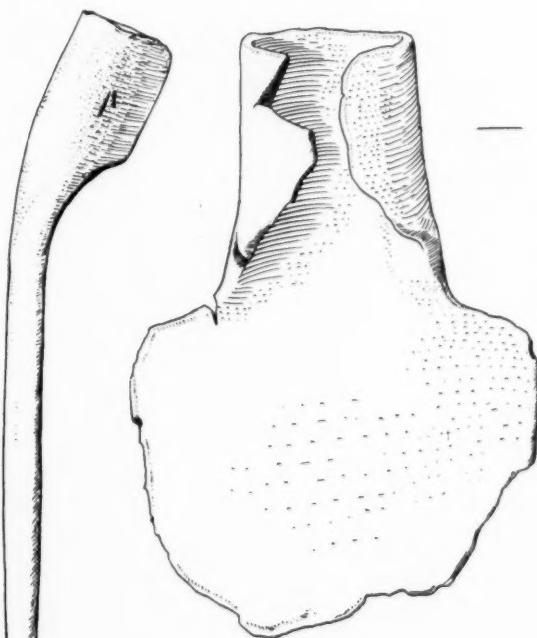


FIG. 27. Socketed bronze pick

FIG. 29. Bronze spade

Drawings one-half actual size

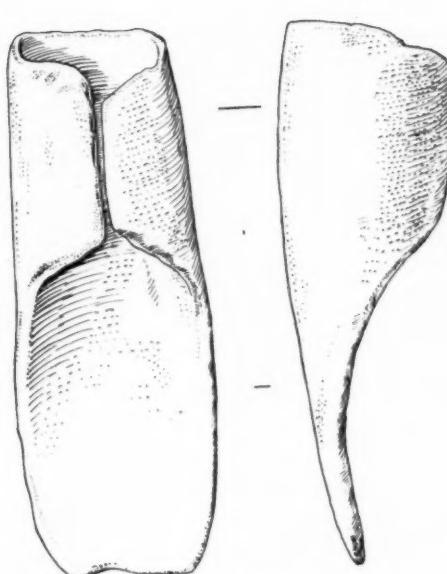


FIG. 28a. Socketed bronze hoe

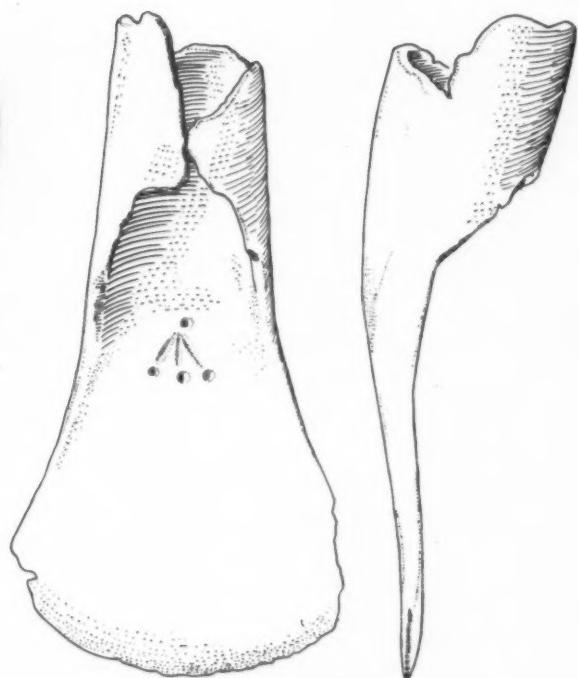


FIG. 28b. Socketed bronze hoe

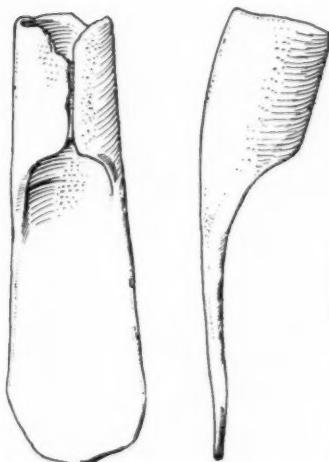


FIG. 28c. Socketed bronze hoe

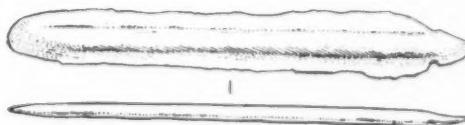


FIG. 30. Bronze spearhead

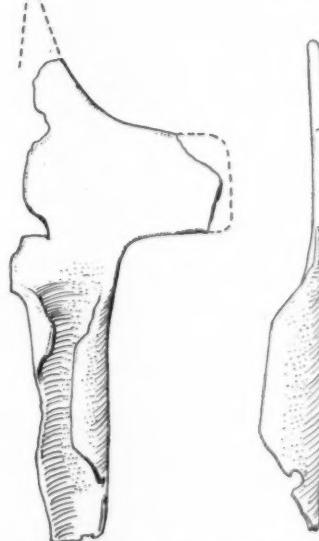


FIG. 31. Bronze halberd or billhook

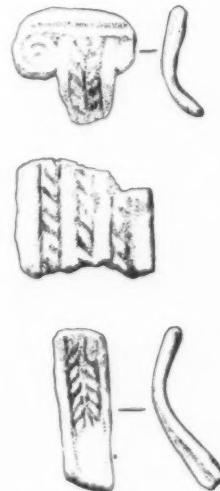


FIG. 32. Fragments of bronze rod tripods

Drawings one-half actual size



FIG. 34. *Qedet* weights



FIG. 35. Scarab with falcon-headed Re



FIG. 36. Cylinder seal showing deity with *atef* crown

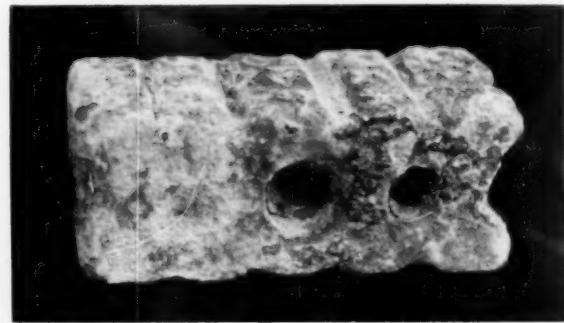


FIG. 38. Bronze swage block

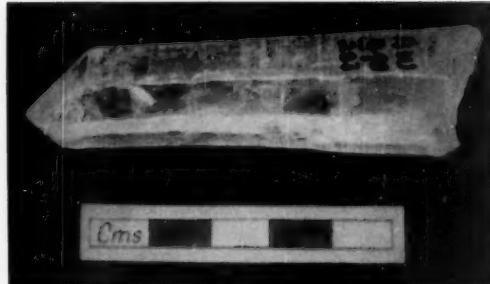


FIG. 39. Crystal



a

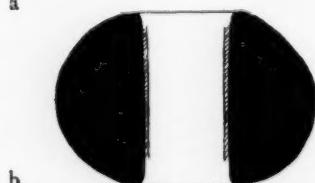


FIG. 37. Stone mace-head with metal lining in perforation



FIG. 40. Lamp from "Captain's Quarters"



FIG. 1. The Granary. Junction of northern and southern parts



FIG. 3. The West Shops seen from above

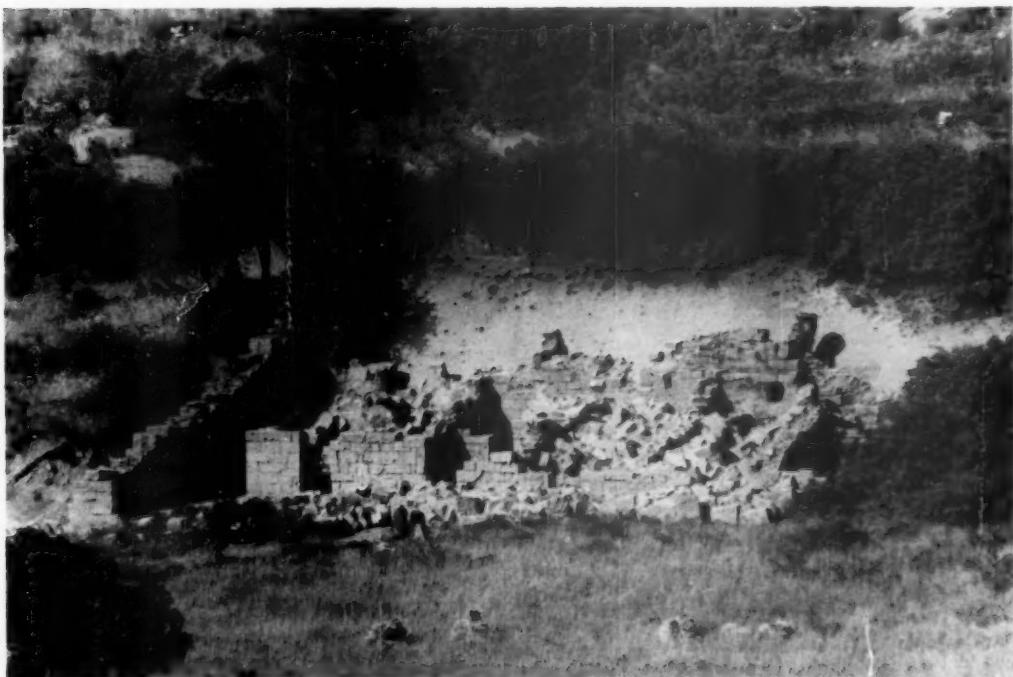


FIG. 2. The West Shops, general view

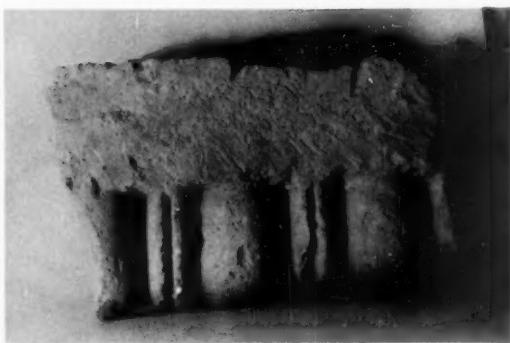


FIG. 4. Archaic molding found in West Shops



FIG. 6. House of the Arched Cistern, looking northwest

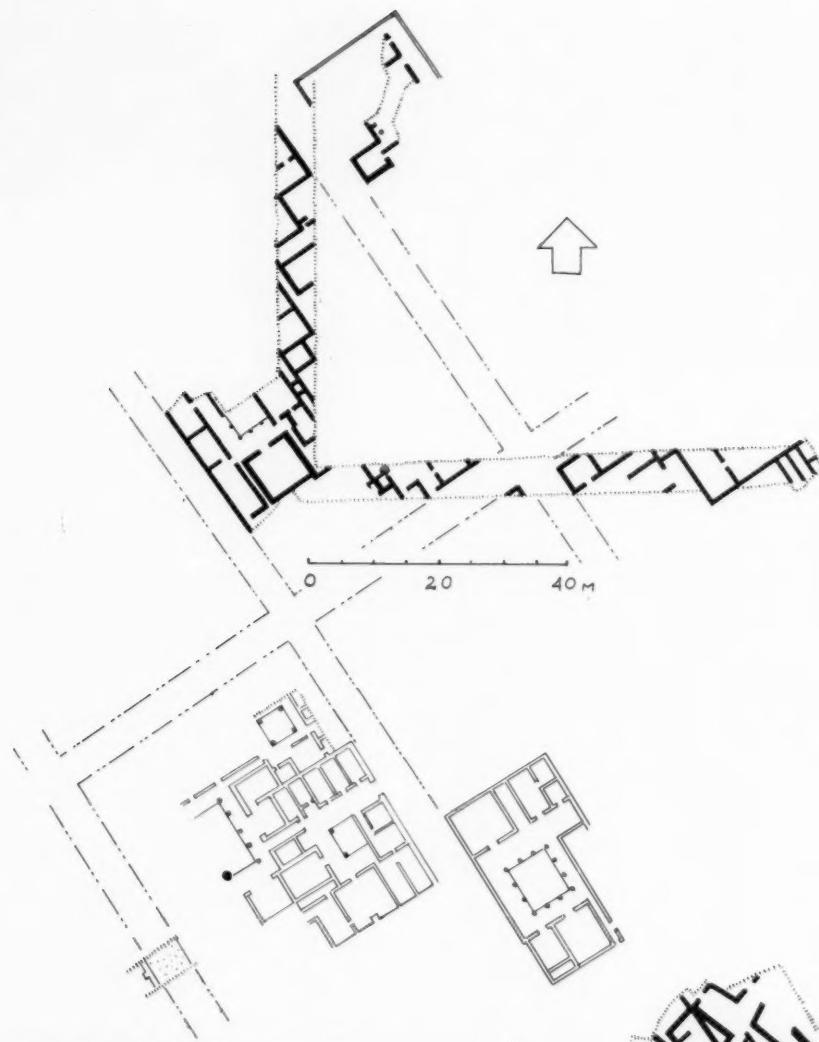


FIG. 5. Plan of habitation on West Hill

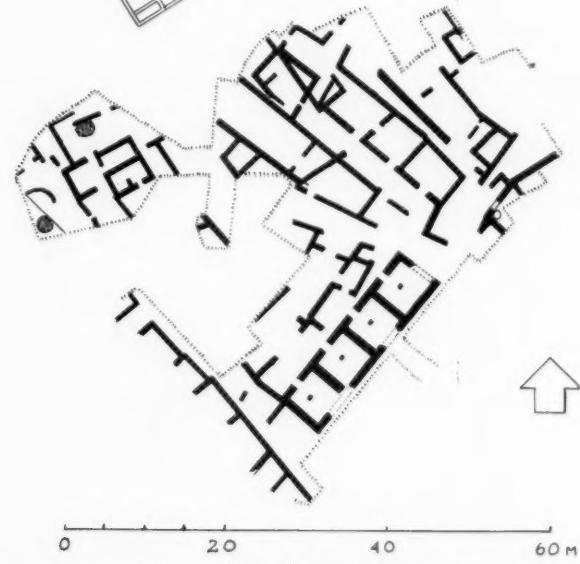


FIG. 10. Cittadella, central area



FIG. 6. House of the Arched Cistern

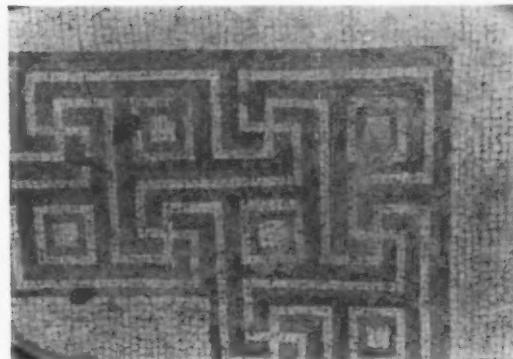


FIG. 7. House of the Arched Cistern, maeander border



FIG. 8. House of the Arched Cistern, Doric capital



FIG. 9. Molds from kilns on East Hill



FIG. 11. Gorgon antefix

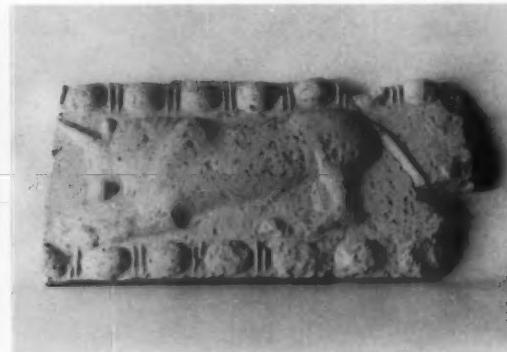


FIG. 14. Terracotta plaque with bull



FIG. 12. Maenad antefix



FIG. 13. Maenad antefix



FIG. 15. Red-figure sherd



FIG. 16. Black-figure skyphos



FIG. 17. Three-spouted lamp



FIG. 18. Syracusan decadrachm by Euainetos



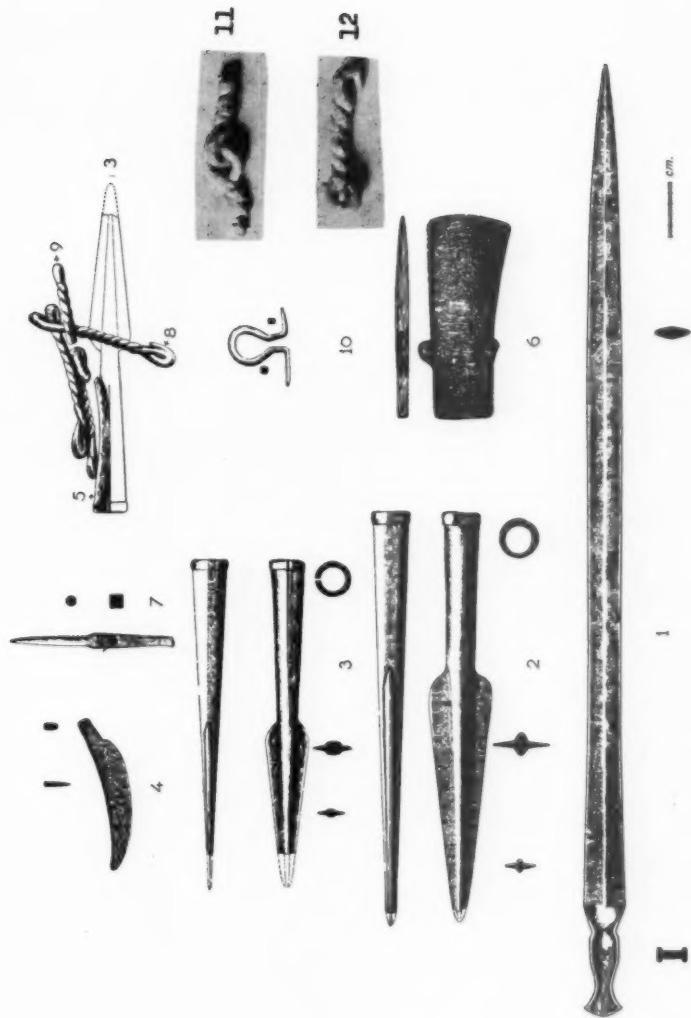


FIG. I. 1-10: Agora, Athens; 11-12: Canziano (Skocjan)



FIG. 2. Distribution map of the iron flat axes with lateral projections



FIG. 2. Kephissia. Bust of Polydeukion



FIG. 1. Kephissia. Bust of Herodes Atticus

PLATE 98 VANDERPOOL

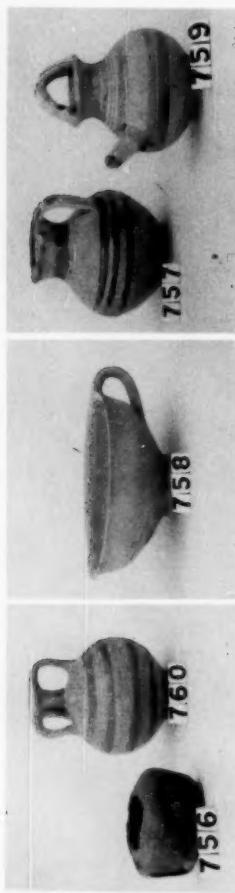


FIG. 4. Perati. Vases from Tomb 104

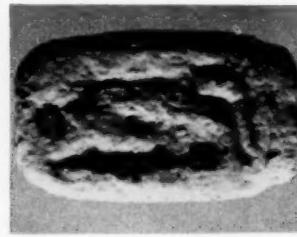


FIG. 5. Perati. Tomb 104.
Cartouche of Ramses II.
Actual size



FIG. 6. Coreyra
Fragments of oinochoai

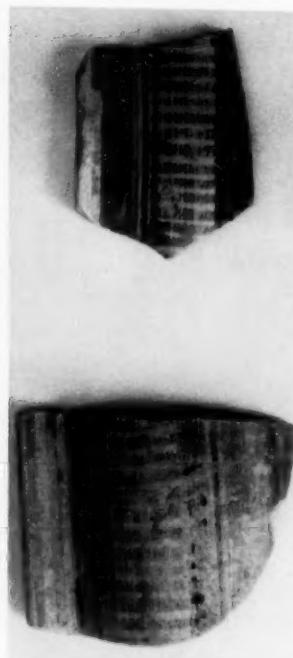


FIG. 7. Coreyra. Fragments of skyphoi

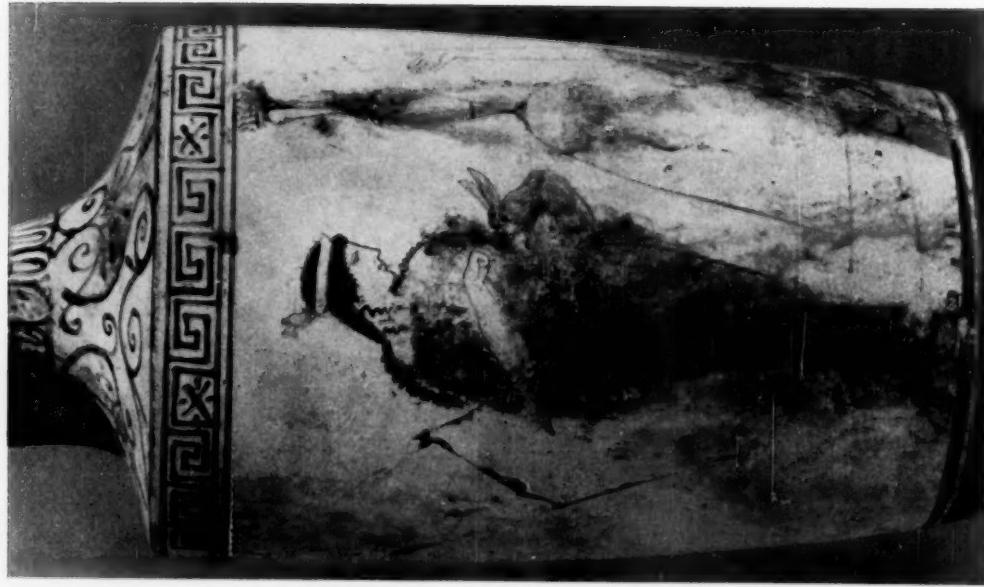


FIG. 3. Anavyssos. White Lekythos

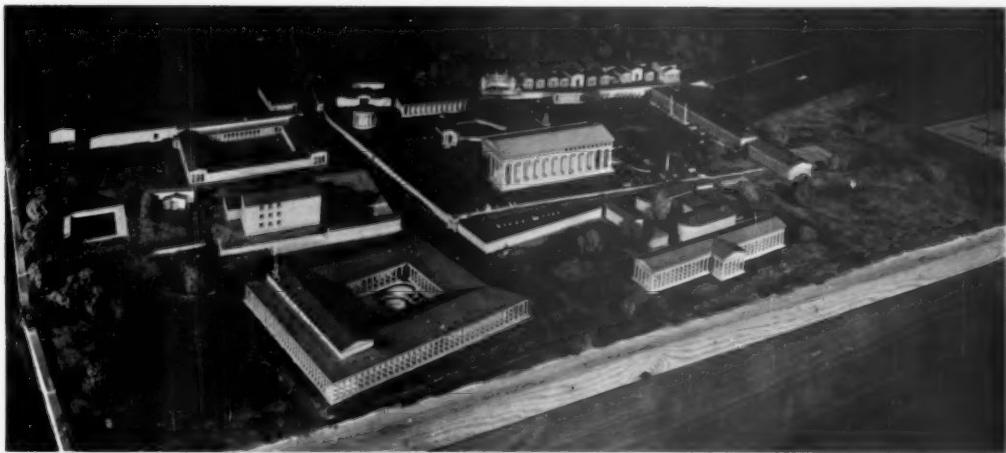


FIG. 8. Olympia. Model of the Altis and surrounding buildings

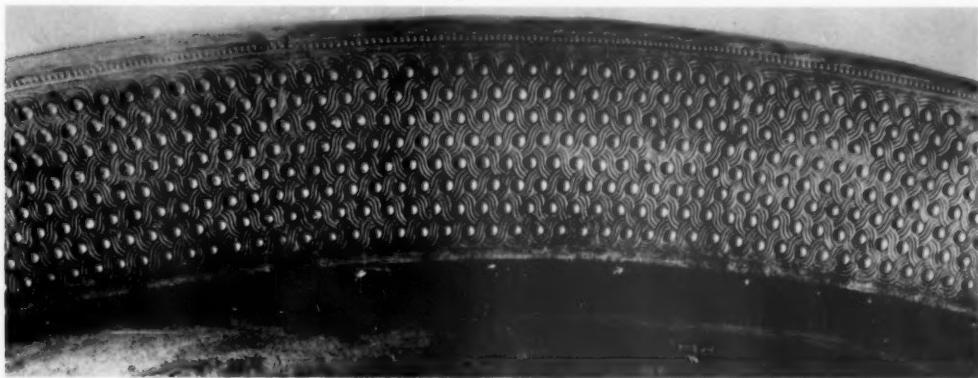


FIG. 9. Olympia. Rim of bronze shield



FIG. 10. Olympia.
Bronze greave



FIG. 11. Olympia. Bronze silenus



FIG. 12. Ephyra. Terracotta figurine



FIG. 13. Ephyra. Oracle of the Dead. Central room



FIG. 14. Ephyra. Oracle of the Dead. Room with pithoi



FIG. 15. Ephyra. Five vases

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"Archaeology as a Career," by John Howland Rowe, has just been published in a revised version. This article, which has been found most useful in guiding interested students, may be obtained as a reprint from the Archaeological Institute, 5 Washington Square North, New York 3. Single copies are free; 25 copies are \$2.50, 50 copies \$5.00, 100 copies \$10.00, postpaid.

ARCHAEOLOGY

The Winter 1961 issue will be devoted to the publication of the Symposium on Archaeological Salvage which was presented at the meeting of the American Association for the Advancement of Science, December 29, 1960, in New York City.

The main areas discussed are: the United States, Canada, China, Great Britain, Egypt and Mexico. Special subjects treated are river basin salvage, highway construction salvage, techniques and tools of archaeological salvage, and the contribution of physics to archaeological conservation. All the papers are illustrated.

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